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**UK METEOROLOGICAL OFFICE
GLOBAL DATA MONITORING REPORT**

MARCH 2001

**Data Assimilation
Meteorological Office
London Rd
Bracknell
Berkshire
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1. Introduction

As the WMO-appointed lead centre for monitoring surface marine data, the U.K. Meteorological Office produces monthly statistics on the quality of these observations received at RSMC Bracknell. This report includes this information along with statistics for most other types of data. The figures and tables contained herein are presented according to the agreed standards for the exchange of monitoring results.

The report is based on data received at the UK Meteorological Office Headquarters, Bracknell in time for inclusion into the appropriate analysis (the current cut-off time is approximately 7.2 hours after each analysis time). The evaluation of data quality is based on comparison with the appropriate 6-hour global model forecast (background field). Generally, the background field is of high quality except in data sparse areas, tropical regions and areas close to steep orography where care should be taken in interpreting the statistics shown.

Comments or queries on the report are welcome and should be addressed to:-

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2 Global Data Monitoring Statistics

Ships, Fixed buoys, Platforms and Drifting buoys observations

TABLES 1-2 contain lists of the stations which are considered to have returned suspect observations of pressure, windspeed, wind direction or temperature, as appropriate, during the month. The criteria for quality control are given on the header page for each table.

Figures 1 and 2 show 10 degree lat/long box average numbers of SHIP/SYNOP and DRIFTER observations received per day throughout the month at Bracknell and assimilated into model runs. Only data from the main hours of 00 UTC, 06 UTC, 12UTC and 18 UTC are included. Box average values are plotted as the nearest whole number (values of x.5 are rounded up). Where the average is more than 999, then 999 is plotted. A box with no observations is blank. If the 24 hour average >0 but <0.5, then 0 is plotted.

Synop Observations

Table 3 contains a list of stations which are considered to have returned suspect observations of Pressure during the month. The criteria for quality control are given in the header page. The reporting practice of each station is included in the list of statistics.

At the UK Met. Office, we monitor SYNOP pressure after it has been interpolated to our Global NWP Model's surface height. For most synoptic stations (about 75%), the surface pressure (at the model surface) is calculated from the reported station-level pressure, or, if this is not available, the height of a standard pressure-level (e.g. 850 hPa or 700 hPa). If neither of these are available, or if the reported station-level pressure is deemed unreliable, the reported mean sea-level pressure is used (about 25% of SYNOPs).

Aircraft observations

Tables 4A (300-150 hPa) and 4B (1000-301 hPa) contain lists of statistics calculated from data received from all airline carriers.

Figures 3A (300-150 hPa) and 3B (1000-301 hPa) show 10 degree lat/long box average numbers of aircraft reports in AIREP/AMDAR code (including AIREP, ACAR, AMDAR, ASDAR and ADS) received per day throughout the month at Bracknell and assimilated into model runs. Observations with a vector wind difference (compared with the model background field) of $>60 \text{ m s}^{-1}$ have been excluded. Box average values are plotted as the nearest whole number (values of $\times 0.5$ are rounded up). Where the average is more than 999, then 999 is plotted. A box with no observations is blank. If the 24 hour average >0 but <0.5 , then 0 is plotted.

Figures 4A-7A (300-150 hPa) and 4B-7B (1000-301 hPa) show wind statistics for AIREP/ASDAR in AIREP/AMDAR code (including AIREP, ACAR, AMDAR, ASDAR and ADS). Observations with a vector wind difference $> 60 \text{ m s}^{-1}$ have been excluded. Statistics have not been calculated for 10 degree lat/long boxes containing <31 observations.

Figure Parameter

- 4 Mean wind vectors
- 5 Mean observation - background wind vector
- 6 Mean observation-background speed (m s^{-1})
- 7 RMS observation-background vector (m s^{-1})

Radiosonde Observations

TABLES 5-7 contain lists of the stations which are considered to have returned suspect observations of geopotential height, vector wind or wind direction, as appropriate, during the month. The criteria for quality control are given on the header page for each table.

Figures 8 and 9 show 10 degree lat/long box average numbers of TEMP 500 hPa GEOPOTENTIAL HEIGHT and TEMP/PILOT 300 hPa WIND observations received per day throughout the month at Bracknell and assimilated into model runs. Data from all hours are included. Box average values are plotted as the nearest whole number (values of $\times 0.5$ are rounded up). Where the average is more than 999, then 999 is plotted. A box with no observations is blank. If the 24 hour average >0 but <0.5 , then 0 is plotted.

APPENDIX I shows details of the gross error limits used in TABLES 5 and 6 and the weights used in the RMS values in TABLE 5.

Satellite Observations

Figures 10-24 show satellite wind statistics for all geostationary satellites. All plots other than **AVAILABILITY** show average data where there are > 10 observations in a 10 degree lat/long box.

Figure	Parameter Plotted	Layer (hPa)
10	Availability/average daily number	701-1000
11	Vector mean wind (observed)	701-1000
12	Observation-background vector wind difference	701-1000
13	Mean observation-background speed differences	701-1000
14	RMS observation-background vector difference	701-1000
15	Availability/average daily number	401-700
16	Vector mean wind (observed)	401-700
17	Observation-background vector wind difference	401-700
18	Mean observation-background speed differences	401-700
19	RMS observation-background vector difference	401-700
20	Availability/average daily number	101-400
21	Vector mean wind (observed)	101-400
22	Observation-background vector wind difference	101-400
23	Mean observation-background speed differences	101-400
24	RMS observation-background vector difference	101-400

Figures 25-39 show sounding statistics from the polar orbiting satellite NOAA-15. Figure 25 shows the mean daily number of ATOVS soundings, and figures 26-39 show mean and standard deviation observation-background differences for brightness temperature, for selected channels.

N.B. The sounding data is bias-corrected (and thinned) before being assimilated in the UKMO NWP model.

Figure		Weighting function peak (hPa)
26	Mean	Surface (HIRS8)
27	SD	Surface (HIRS8)
28	Mean	700 (HIRS15)
29	SD	700 (HIRS15)
30	Mean	500-700 (HIRS11)
31	SD	500-700 (HIRS11)
32	Mean	400 (HIRS4)
33	SD	400 (HIRS4)
34	Mean	700 (AMSUA5)
35	SD	700 (AMSUA5)
36	Mean	300 (AMSUA7)
37	SD	300 (AMSUA7)
38	Mean	100 (AMSUA9)
39	RMS	100 (AMSUA9)

3 Composite Observing Systems for the North Atlantic (COSNA)

This section shows statistics for upper air (radiosonde and aircraft) and surface (drifter) data for the North Atlantic area for data received at Bracknell during the month.

TABLE 8 shows quality statistics for **Mean Sea-level Pressure, Windspeed and Wind Direction** received at Bracknell in DRIFTER code during the month for the area 10°N - 80°N, 85°W - 0°W.

TABLE 9 shows quality statistics for **Temperature and Vector Wind** received at Bracknell from aircraft during the month for the area 40°N - 70°N, 60°W - 0°W.

Table 10 - 13 show quality statistics (**Geopotential Height and Windspeed at 100 and 500 hPa**) for all TEMPSHIPS in the area bounded by 0°N - 90°N, 100°W - 40°E and selected TEMP stations within the same area.

Revisions

1. May 95 Monitoring statistics for NOAA-11 removed. Figures 25-27 now show data for NOAA-12
2. May 95 Notes giving details of observations included in wind direction statistics clarified and corrected.
3. August 95 Monitoring statistics for NOAA-14 added with figures 28-30.
4. February 96 Monitoring statistics for GOES-7 have been replaced by statistics for GOES-8 and GOES-9.
5. April 96. 500 km and 120 km SATEMs replaced by 120 km resolution temperature profiles produced locally from the radiances disseminated by NESDIS.
6. February 97 Monitoring statistics for Meteosat 5 have been replaced by statistics for Meteosat 6.
7. Sept 97 Monitoring statistics for NOAA-12 removed. Figures 25-27 now show data for NOAA-11
8. January 1998. Increase in resolution of UKMO global forecast model.
9. April 1998. GOES winds ceased on 2nd March 1998, and were replaced with GOES high resolution winds from 15th.
10. June 1998. Monitoring statistics for Meteosat-6 were replaced by monitoring statistics for Meteosat-7, from 3rd June.
11. June 1998. Corrections in our processing of radiosonde data resulted in a decrease in the number of 500hPa geopotential heights in Figure 8 of about 230 per 24 hours (compared with previous reports), and a small increase in the number of 300hPa winds in Figure 9.
12. July 1998. Meteosat-5 began transmitting winds from 2nd July, at 63 degrees East (over the Indian ocean), and this data is included in the statistics.
13. July 1998. GOES-9 (at 135W) was replaced mid-month by GOES-10 (initially at 105W, moving towards 135W).
14. February 1999. Problems with NOAA-11, and TOVS data ceased to be assimilated from 26 February.
15. March 1999. UKMO introduced 3-D VAR assimilation system on 29 March, and also began assimilating ATOVS data from NOAA-15.
16. May 1999. Included statistics for ATOVS sounding data from NOAA-15.
17. September 1999. Included statistics for high resolution visible winds from Meteosat-5 and Meteosat-7.
18. October 1999. The 3-D VAR assimilation system was upgraded on 19 October, including improvements in the assimilation of ATOVS radiances, use of SSM/I surface wind speed, an improvement in the calculation of surface pressure for SYNOPS, and thinning and revision of observation errors of aircraft data.
19. November 1999. High resolution visible winds from Meteosat-5 and Meteosat-7 removed until used operationally.
20. April 2000. Aireps in Table 4 and Figures 3-7 split into ranges 300-150 hPa (A) and 1000-301 hPa (B).
21. September 2000. Corrected an error affecting the mean positions of a minority of buoys in Table 2.

TABLE 1

**MONITORING OF MARINE SURFACE OBSERVATIONS
MONTHLY SUSPECT LIST - SHIPS, FIXED BUOYS AND PLATFORMS
MONITORING CENTRE: BRACKNELL
MONTH: MARCH 2001**

Monitoring procedures

Period	:One calendar month.
Data monitored	:Reports from each unique identifier for ships, fixed buoys and platforms.
Standard of comparison	:Background field from UKMO global model.
Observation times	:00, 06, 12, 18 UTC

Elements monitored

:Mean sea level pressure (hPa).
:Wind speed (m s^{-1}).
:Wind direction (Degrees).

Parameters monitored

:NOBS	:Number of observations received excluding duplicates.
:NGE	:Number of observations with gross errors.
:PGE	:Percentage of observations with gross errors.
:SD	:SD of difference of observations from background values excluding those with gross errors.
:BIAS	:Mean difference of observations from background values excluding those with gross errors. N.B. a positive bias indicates the observation is veered to the background.
:RMS	:Root Mean Square difference of observations from background values excluding those with gross errors.

GROSS ERROR LIMIT

:15 hPa (pressure)
:25 m s^{-1} (vector wind)

SELECTION CRITERIA

:NOBS	≥ 20 , and one or more of the following:		
1. bias	≥ 4 hPa $\geq 5 \text{ m s}^{-1}$ ≥ 30 degrees	(pressure), (wind speed), (direction).	
2. SD	≥ 6 hPa ≥ 80 degrees	(pressure), (direction).	
3. PGE	≥ 25		

N.B. Observations of wind direction are only included in the wind direction statistics if the observed OR background wind speed $> 5 \text{ m s}^{-1}$

IDENTIFIER	HOUR	ELEM	LEVEL	NOBS	NGE	PGE	SD	BIAS	RMS
MEAN SEA LEVEL PRESSURE									
BOAB	ALL	P	SUR	41	0	0	2.0	-4.0	4.5
CGDS	ALL	P	SUR	84	84	100			
CG2960	ALL	P	SUR	164	93	57	2.8	1.1	3.0
C6FD9	ALL	P	SUR	35	0	0	2.2	4.8	5.3
C6FE5	ALL	P	SUR	22	0	0	1.1	11.3	11.3
C6PZ3	ALL	P	SUR	51	0	0	1.7	5.8	6.0
ELGG3	ALL	P	SUR	32	10	31	6.7	0.6	6.7
ELTE6	ALL	P	SUR	20	0	0	1.5	-4.1	4.3
ELVJ9	ALL	P	SUR	55	0	0	1.2	-5.5	5.6
ELWR	ALL	P	SUR	58	0	0	1.1	-6.7	6.8
LAFQ5	ALL	P	SUR	38	3	8	1.4	-7.2	7.3
OJAK	ALL	P	SUR	40	0	0	1.0	-4.2	4.3
OOUU2	ALL	P	SUR	27	3	11	3.2	-5.0	5.9
OUVZ2	ALL	P	SUR	22	0	0	0.6	-6.7	6.8
P3YR5	ALL	P	SUR	32	0	0	1.6	6.7	6.9
P3YS5	ALL	P	SUR	53	0	0	1.4	4.7	4.9
UAMR	ALL	P	SUR	82	1	1	1.2	-12.2	12.2
UBDN	ALL	P	SUR	23	0	0	0.7	5.9	5.9
UCAC	ALL	P	SUR	34	0	0	0.9	4.5	4.6
UCJB	ALL	P	SUR	47	1	2	1.3	-5.1	5.3
UCJL	ALL	P	SUR	26	0	0	2.1	5.0	5.4
UDUK	ALL	P	SUR	51	0	0	1.6	5.4	5.6
UDYG	ALL	P	SUR	112	10	9	7.2	3.8	8.1
UGGA	ALL	P	SUR	103	1	1	2.2	-4.7	5.2
UHLE	ALL	P	SUR	114	0	0	2.1	-10.2	10.4
UHVW	ALL	P	SUR	25	0	0	1.0	6.3	6.4
VCRT	ALL	P	SUR	51	0	0	2.2	-5.3	5.7
VRVI2	ALL	P	SUR	49	0	0	1.1	5.3	5.4
VTST	ALL	P	SUR	20	0	0	2.0	-4.9	5.3
VVGC	ALL	P	SUR	82	4	5	1.8	10.5	10.7
WWXA	ALL	P	SUR	65	0	0	1.4	-5.5	5.7
3FHF8	ALL	P	SUR	20	0	0	0.8	-4.7	4.7
3FWP3	ALL	P	SUR	23	0	0	1.3	4.0	4.2
4XGV	ALL	P	SUR	37	0	0	0.7	6.8	6.8
9MBX5	ALL	P	SUR	56	0	0	3.3	6.2	7.1
9VRA	ALL	P	SUR	62	0	0	2.3	-5.3	5.8
WIND SPEED									
C6YC	ALL	SPEED	SUR	34	3	9	7.2	5.6	9.1
DEHY	ALL	SPEED	SUR	28	11	39	7.5	8.0	11.0
DFRZ	ALL	SPEED	SUR	50	3	6	5.5	5.3	7.6
DMRX	ALL	SPEED	SUR	38	0	0	7.2	5.5	9.1
ELOV9	ALL	SPEED	SUR	46	0	0	3.3	5.1	6.0
ELRJ6	ALL	SPEED	SUR	26	0	0	4.9	5.1	7.1
ELVG2	ALL	SPEED	SUR	26	13	50	4.3	5.2	6.7
ELWP8	ALL	SPEED	SUR	31	0	0	6.6	7.4	9.9
ELWZ5	ALL	SPEED	SUR	38	0	0	5.4	5.2	7.5
ELXT8	ALL	SPEED	SUR	27	0	0	6.2	10.0	11.8
ELXU2	ALL	SPEED	SUR	33	0	0	2.9	6.0	6.6
FNID	ALL	SPEED	SUR	43	0	0	4.3	8.6	9.6
LAPP4	ALL	SPEED	SUR	22	0	0	4.2	5.4	6.9
MSBM4	ALL	SPEED	SUR	70	3	4	6.7	10.1	12.1
PJIB	ALL	SPEED	SUR	31	0	0	4.1	7.3	8.4
PJOD	ALL	SPEED	SUR	67	0	0	4.4	5.7	7.2
SFRZ	ALL	SPEED	SUR	48	1	2	5.1	13.6	14.5
S6JM	ALL	SPEED	SUR	66	28	42	6.0	4.5	7.5
S6TY	ALL	SPEED	SUR	46	0	0	3.2	5.0	5.9
VRVJ5	ALL	SPEED	SUR	65	30	46	7.1	3.5	8.0
VVML	ALL	SPEED	SUR	23	0	0	2.5	5.2	5.8
V2PB1	ALL	SPEED	SUR	37	3	8	6.5	7.2	9.7
44145	ALL	SPEED	SUR	235	0	0	3.6	5.4	6.4

IDENTIFIER	HOUR	ELEM	LEVEL	NOBS	NGE	PGE	SD	BIAS	RMS
WIND DIRECTION									
MSBM4	ALL	DIRN.	SUR	31	3	10	33.4	36.8	49.6
S6JM	ALL	DIRN.	SUR	40	28	70	101.2	-6.0	101.4
62109	ALL	DIRN.	SUR	358	4	1	114.0	13.5	114.8

Figure 1. SHIP/SYNOP mean daily count. MARCH 2001

Main hours only

Global average number of observations in 24 hours = 21376



TABLE 2

**MONITORING OF MARINE SURFACE OBSERVATIONS
MONTHLY SUSPECT LIST - DRIFTING BUOYS
MONITORING CENTRE: BRACKNELL
MONTH: MARCH 2001**

Monitoring procedures

Period	:One calendar month.	
Data monitored	:Reports from each unique identifier for drifting buoys.	
Standard of comparison	:Background field from UKMO global model.	
Position	:Average latitude and longitude for period.	
Observation times	:00, 06, 12, 18 UTC	
Elements monitored	:Mean sea level pressure (hPa). :Wind speed (m s^{-1}). :Wind direction (degrees).	
Parameters monitored		
	:NOBS	:Number of observations received excluding duplicates.
	:NGE	:Number of observations with gross errors.
	:PGE	:Percentage of observations with gross errors.
	:SD	:SD of difference of observations from background values excluding those with gross errors.
	:BIAS	:Mean difference of observations from background values excluding those with gross errors. N.B. a positive bias indicates the observation is veered to the background.
	:RMS	:Root Mean Square difference of observations from background values excluding those with gross errors.
GROSS ERROR LIMIT	:15 hPa :25 m s^{-1}	(pressure) (vector wind)
SELECTION CRITERIA :	NOBS	≥ 20 , and one or more of the following:
	1. bias	≥ 4 hPa (pressure), ≥ 5 m s^{-1} (wind speed), ≥ 30 degrees (direction).
	2. SD	≥ 6 hPa (pressure), ≥ 80 degrees (direction).
	3. PGE	≥ 25 .

N.B. Observations of wind direction are only included in the wind direction statistics if the observed OR background wind speed $> 5 \text{ m s}^{-1}$

IDENTIFIER	LAT.	LONG.	HOURL	ELEM	LEVEL	NOBS	NGE	PGE	SD	BIAS	RMS
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MEAN SEA LEVEL PRESSURE

31953	-20.8	-40.7	ALL	P	SUR	765	1	0	2.3	7.7	8.0
62515	45.6	13.2	ALL	P	SUR	32	32	100			

WIND SPEED

52523	28.3	129.2	ALL	SPEED	SUR	48	0	0	3.7	-8.0	8.9
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WIND DIRECTIONS

41611	17.8	-77.3	ALL	DIRN.	SUR	26	19	73	112.2	51.8	123.5
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Figure 2. DRIFTER mean daily count. MARCH 2001
Main hours only
Global average number of observations in 24 hours = 8428

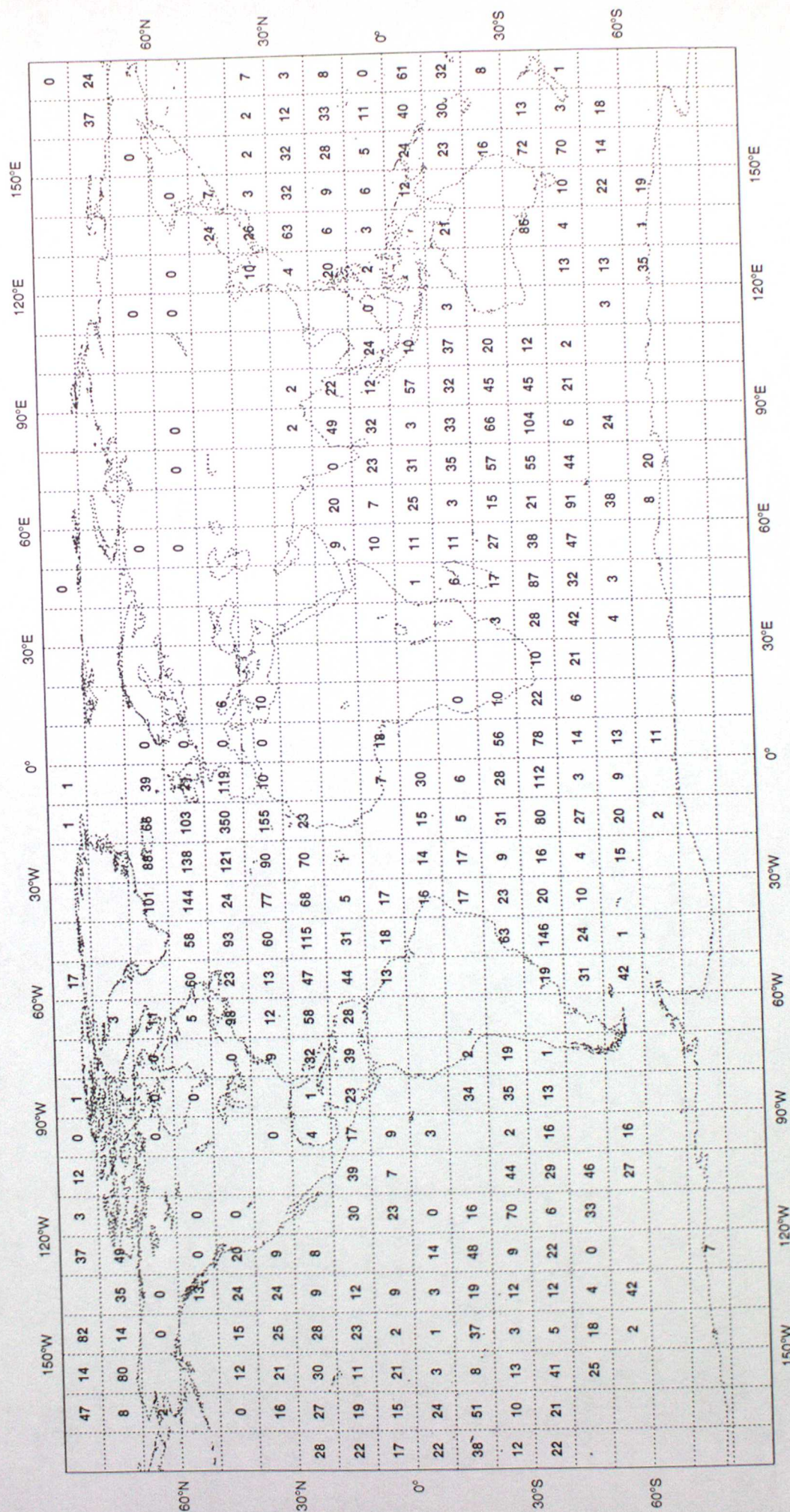


TABLE 3

**MONITORING OF LAND SURFACE OBSERVATIONS
MONTHLY SUSPECT LIST - SYNOPS & AUTOSYNOPS
MONITORING CENTRE: BRACKNELL
MONTH: MARCH 2001**

Monitoring procedures

Period	:One calendar month.	
Data monitored	:Reports from each unique identifier for synops & autosynops.	
Standard of comparison	:Background field from UKMO global model.	
Observation times	:00, 06, 12, 18 UTC	
Elements monitored	:Surface pressure (hPa).	
Parameters monitored	:HT(m)	:Station height (in metres) as given in WMO No. 9 Vol A
	:RP	:Pressure reporting practice M=mean sea level pressure (hPa) reported. S=Station level pressure reported. 8=Geopotential height (m) of 850 hPa surface reported. 7=Geopotential height (m) of 700 hPa surface reported.
	:NOBS	:Number of observations received excluding duplicates.
	:NGE	:Number of observations with gross errors.
	:PGE	:Percentage of observations with gross errors.
	:%REJ	:Percentage of observations flagged excluding those with gross errors.
	:SD	:SD of difference of observations from background values excluding those with gross errors.
	:BIAS	:Mean difference of observations from background values excluding those with gross errors.
	:RMS	:Root Mean Square difference of observations from background values excluding those with gross errors.
GROSS ERROR LIMIT	:15 hPa	(pressure)
SELECTION CRITERIA	:NOBS	≥ 20 ,and one or more of the following:
	1. bias	≥ 4 hPa
	2. SD	≥ 6 hPa
	3. PGE	≥ 25.

N.B. For stn ht ≥ 500m, mslp is that calculated from station level pressure where available.
For stn ht < 500m, mslp is that as reported by the station where available.

WMO REGION 1:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
61816	10.9N	14.3W	69	MS	22	9	41	9	3.0	-1.1	3.2
62056	32.8N	21.8E	625	S8	96	0	0	1	1.0	-5.8	5.9
62271	24.2N	23.3E	417	M	85	0	0	2	1.4	4.2	4.4
62790	12.1N	24.9E	674	S	81	2	2	2	1.5	4.7	4.9
63602	3.1N	30.9E	1204	S	52	52	100	0			
63680	0.3N	32.6E	1144	S	26	0	0	0	0.8	-8.1	8.1
63801	4.9S	29.6E	882	S8	23	0	0	0	1.0	8.9	9.0
68338	26.9S	24.6E	1234	S8	44	44	100	0			
68396	26.5S	31.3E	641	S8	53	0	0	0	0.8	5.0	5.1
68575	30.0S	30.0E	1175	S8	115	115	100	64			

WMO REGION 2:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
30554	54.5N	113.6E	995	MS	122	0	0	0	4.9	5.4	7.3
30967	49.9N	115.8E	623	MS	91	0	0	1	2.8	-6.7	7.3
36982	41.9N	78.2E	3635	S7	116	1	1	4	1.6	-5.2	5.4
40741	36.6N	61.2E	235	MS	99	0	0	0	1.4	-4.8	5.0
41254	23.1N	57.7E	1755	S8	71	71	100	0			
41314	17.7N	54.0E	467	MS	118	1	1	0	0.8	4.0	4.1
41396	16.0N	48.9E	700	MS	49	1	2	0	1.2	7.0	7.1
41466	13.7N	44.1E	1402	8	45	0	0	0	0.6	-5.6	5.6
41696	29.0N	66.6E	2015	S	66	31	47	0	1.3	-0.6	1.4
47022	40.8N	128.2E	1200	S	96	0	0	2	1.7	4.7	5.0
51495	43.5N	91.6E	874	M	122	0	0	0	2.6	7.6	8.0
52602	38.8N	93.4E	2734	S	122	0	0	0	1.3	-6.1	6.2
52866	36.6N	101.8E	2262	S	122	0	0	0	0.9	-4.9	5.0
52955	35.6N	100.8E	3201	S	122	2	2	0	0.8	12.6	12.6
56144	31.8N	98.6E	3184	S	122	0	0	0	1.2	-5.6	5.7
56146	31.6N	100.0E	339	S	122	122	100	0			
56444	28.5N	98.9E	3488	S	122	2	2	0	0.6	13.7	13.7
56462	29.0N	101.5E	2994	S	122	0	0	0	1.7	8.2	8.4

WMO REGION 3:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
80099	7.1N	70.7W	128	MS	51	0	0	2	1.7	-7.8	8.0
80342	1.4N	77.3W	1796	S	45	0	0	0	0.9	4.1	4.2
83214	10.3S	54.9W	285	MS	83	0	0	0	4.5	-5.7	7.3
83235	12.4S	46.4W	604	MS	88	1	1	1	1.3	6.4	6.5
83332	14.1S	46.4W	826	MS	86	14	16	0	1.0	13.1	13.1
83408	14.3S	43.8W	447	MS	78	0	0	0	1.0	11.1	11.1
83488	17.8S	42.9W	1097	MS	88	88	100	0			
83531	18.6S	46.5W	940	MS	87	0	0	1	1.5	-6.4	6.6
83579	19.6S	46.9W	1004	MS	88	0	0	1	0.8	-4.1	4.2
83587	19.9S	43.9W	850	MS	88	0	0	0	0.9	-7.4	7.5
83773	23.1S	48.9W	793	MS	88	0	0	0	0.9	-10.7	10.7
83836	25.5S	50.6W	837	MS	90	0	0	0	0.9	-5.2	5.3
83953	30.9S	55.5W	231	MS	89	1	1	1	1.5	-10.6	10.7
84377	3.8S	73.3W	125	MS	101	0	0	1	1.8	4.1	4.5
84401	5.2S	80.6W	49	MS	103	0	0	0	1.0	4.1	4.2
84425	5.9S	76.1W	179	MS	20	0	0	0	1.0	5.3	5.4
84455	6.5S	76.4W	281	MS	79	0	0	0	1.3	4.5	4.7
84472	7.1S	78.5W	2620	M	49	0	0	0	0.5	-6.1	6.1
84474	7.2S	76.7W	350	S	25	0	0	0	1.0	11.0	11.0
84686	13.6S	72.0W	3248	S	106	0	0	0	0.6	-4.6	4.6
84688	13.7S	73.4W	3444	S	40	0	0	0	1.8	-9.5	9.7
84782	18.1S	70.3W	468	MS	91	0	0	0	1.2	6.9	7.0
85140	14.3S	67.4W	140	MS	45	1	2	0	1.8	4.3	4.7
85264	18.5S	64.1W	1998	S	44	44	100	0			
85312	19.8S	63.9W	992	M	34	4	12	18	2.4	-10.1	10.4

WMO REGION 3:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
85432	22.5S	68.9W	2320	S8	78	0	0	0	0.8	5.6	5.7
85836	43.6S	71.8W	277	M	39	0	0	0	2.1	4.5	5.0
88986	59.4S	27.3W	78	MS	40	40	100	0			

WMO REGION 4:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
71048	61.6N	125.8W	610	MS	121	1	1	0	1.9	4.3	4.7
71506	66.9N	136.3W	720	MS	121	0	0	1	1.7	-5.1	5.4
76118	30.4N	109.7W	1040	MS	36	0	0	0	0.7	-10.6	10.6
76243	28.7N	100.5W	250	MS	76	0	0	1	1.3	4.7	4.9
76658	19.2N	103.7W	494	MS	43	0	0	0	0.9	7.2	7.3
76743	18.0N	92.9W	10	MS	79	0	0	0	0.9	6.0	6.1
76840	16.2N	93.9W	64	MS	59	0	0	0	1.1	4.3	4.4
76903	14.9N	92.3W	118	MS	79	0	0	0	0.6	6.7	6.7
78482	18.2N	71.1W	3	M	79	0	0	62	1.7	-6.0	6.2

WMO REGION 5:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
92010	6.1S	145.4E	1587	M	42	0	0	0	0.8	10.5	10.5
92036	2.4S	147.4E	1	8	237	237	100	0			
94130	14.8S	131.9E	120	MS	108	0	0	0	0.8	5.6	5.7
94384	24.1S	151.9E	34	MS	117	0	0	0	0.6	4.1	4.1
94868	37.8S	145.0E	35	MS	123	0	0	0	0.7	9.7	9.7
96505	3.7N	115.7E	915	S8	29	29	100	0			
97378	10.7S	123.1E	1	MS	46	45	98	0	0.0	-14.9	14.9

WMO REGION 6:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
01245	62.8N	9.7E	671	MS	89	0	0	42	3.8	4.9	6.2
04416	72.6N	38.4W	3202	S	114	0	0	0	1.2	-4.0	4.2
06605	47.1N	7.1E	1599	S8	122	0	0	0	1.0	-4.3	4.4
06685	47.0N	9.1E	515	MS	122	0	0	11	1.3	5.9	6.0
10557	50.5N	11.1E	845	S8	366	366	100	0			
12140	54.4N	18.7E	2	MS	122	0	0	1	1.0	7.8	7.9
13269	44.3N	19.9E	176	MS	116	1	1	2	1.3	7.2	7.3
14554	44.9N	18.4E	140	S	52	9	17	0	0.7	-13.4	13.4
14650	43.8N	18.0E	972	S	59	59	100	0			
16021	46.3N	11.8E	2004	S8	123	38	31	0	1.0	-0.8	1.3
16470	36.8N	12.0E	191	MS	51	0	0	0	0.8	-4.2	4.3
17092	39.8N	39.5E	1218	S8	120	0	0	0	1.2	8.4	8.5

ANTARCTIC:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
89208	90.0S	0.0W	2835	M	29	29	100	0			
89264	71.4S	68.9W	780	S	123	0	0	0	1.4	6.6	6.7
89266	72.2S	60.3W	91	S	217	133	61	0	5.4	-2.7	6.0
89272	74.8S	71.5W	1369	S	252	252	100	0			
89612	66.3S	110.8E	390	S	243	243	100	0			
89627	77.2S	123.5E	3084	S	382	296	77	20	0.4	-14.5	14.5
89637	69.9S	130.0E	2560	S	302	205	68	25	0.5	14.2	14.2
89661	73.1S	169.6E	200	S	80	0	0	0	1.9	7.5	7.7
89666	76.7S	163.0E	200	S	77	77	100	0			
89744	74.0S	43.0E	3353	S	272	0	0	0	0.9	4.9	5.0
89769	78.5S	168.4E	50	S	393	393	100	0			
89847	67.6S	146.0E	30	S	311	0	0	0	1.6	-9.0	9.1

TABLE 4A

MONTHLY MONITORING OF AIRCRAFT OBSERVATIONS
MONITORING CENTRE: BRACKNELL
MONTH: MARCH 2001

Monitoring procedures

Period	:One calendar month.
Data monitored	:Statistics for each airline carrier.
Area monitored	:90°N - 90°S, 180°W - 180°E.
Standard of comparison	:Background field from UKMO global model.
Observation times	:All hours combined.
Level(s) monitored	:300.0 - 150.0 hPa
Elements monitored	:TEMP in °C ; WIND in m s ⁻¹
Parameters monitored	
:N REP.	:Number of observations received excluding duplicates.
:PG	:Percentage of observations with gross errors.
:PR	:Percentage of observations rejected by quality control including rejections from the duplicate check.
:PC	:Percentage of observations with calm winds.
:RMS	:Root Mean Square difference of observations from background values excluding those with gross errors in Temperature & vector wind.
:BIAS	:Mean difference of observations from background values excluding those with gross errors in Temperature & Wind Speed.
GROSS ERROR LIMITS	:10.0 °C ; 60 m s ⁻¹ Vector Wind
SELECTION CRITERIA	:N REP ≥ 20

NB : All American ACARS data are grouped together and statistics are shown at the bottom of the table as "US ACARS". All ADS reports are similarly grouped together.

IDENT.	N.REP.	TEMPERATURE				N.REP.	WIND				BIAS
		PG	PR	RMS	BIAS		PG	PR	PC	RMS	
AAA	36	0	50	1.1	0.3	36	0	50	0	5.0	0.0
AAH	892	0	39	1.6	0.3	878	0	40	0	7.2	1.7
AAL	5767	0	24	1.4	0.1	5716	0	24	0	6.7	1.0
AAR	1606	0	7	1.7	-0.5	1597	0	9	0	8.3	0.6
ACA	1873	0	4	1.6	0.1	1894	0	4	0	6.4	0.5
ACI	49	0	51	1.3	0.6	49	0	51	0	10.6	2.3
AEA	903	1	4	1.7	0.3	896	0	4	0	8.8	0.9
AEL	655	0	5	1.7	-0.7	642	0	5	0	7.4	1.1
AEY	398	0	3	2.1	1.2	395	0	2	0	6.8	1.1
AFL	460	0	4	1.8	0.4	458	0	3	0	6.9	1.1
AFR	2014	1	7	1.8	-0.2	2023	0	7	0	7.6	1.0
AIH	293	1	5	1.9	-0.1	293	0	3	0	6.9	1.5
AJM	213	0	1	1.5	0.0	210	0	2	0	7.6	1.2
ALM	105	0	8	1.5	0.5	106	0	10	0	9.1	0.6
AMM	155	0	1	1.6	0.1	152	1	3	0	7.9	1.8
AMT	829	1	42	2.2	1.3	830	0	42	0	7.8	1.1
AMX	294	1	4	1.9	0.4	295	1	5	0	9.4	0.9
ANA	1015	0	15	1.9	0.7	1019	0	15	0	8.1	0.7
ANZ	6319	1	33	1.3	0.3	6281	0	33	0	6.9	1.0
AOM	1017	0	13	1.7	0.5	1018	0	12	0	7.9	0.7
ARG	69	3	17	2.1	0.7	68	0	15	0	8.6	1.4
AVA	394	2	6	1.8	0.5	392	0	6	0	9.3	0.7
AVE	182	1	3	1.9	0.8	179	1	7	0	12.7	1.6
AVN	178	1	51	1.0	0.0	178	1	51	0	5.9	0.2
AXF	42	5	31	0.8	0.4	42	0	29	0	5.9	0.5
AZA	623	1	5	2.1	-0.1	625	0	5	0	7.3	0.6
BAL	323	1	7	1.7	0.1	326	1	7	0	9.0	1.4
BAW	1118	1	11	1.8	0.0	1102	0	12	0	6.3	0.9
BBB	44	0	0	0.9	0.2	41	0	2	0	10.6	2.6
BLX	46	0	0	1.5	-0.7	46	0	9	0	12.1	-1.6
BWA	291	1	100	2.0	1.2	286	0	5	0	8.3	0.9
CAL	176	2	6	1.6	0.5	180	0	7	0	8.7	0.2
CCA	228	5	24	2.6	-0.1	243	1	100	0	12.5	-0.4
CDN	1444	1	20	1.7	0.2	1410	0	19	0	8.4	0.5
CES	511	0	6	1.7	0.5	525	2	10	0	10.0	0.4
CFC	22	0	9	2.1	0.8	23	0	9	0	5.7	1.5
CFG	1074	0	3	1.7	-0.7	1068	0	3	0	7.7	0.5
CLX	440	0	3	1.6	-0.2	437	0	3	0	5.2	0.4
CMI	224	1	7	2.0	0.4	234	0	7	0	10.6	0.4
CMM	555	1	23	1.6	-0.4	552	0	22	0	8.4	1.9
COA	1424	1	28	1.4	0.1	1424	0	28	0	8.7	1.7
CPA	21	10	19	1.1	0.3	21	0	14	0	5.3	2.1
CRL	1008	0	6	2.1	0.8	1012	0	6	0	7.6	1.0
CSN	125	0	11	2.2	0.4	122	1	16	0	12.9	1.7
CTB	58	2	5	1.3	0.6	57	0	9	0	8.9	-1.3
CUB	207	1	4	1.7	1.0	207	0	5	0	9.5	0.0
DAL	3004	0	38	1.5	0.0	3032	0	38	0	6.4	0.8
DBY	483	1	3	1.6	-0.3	485	0	2	0	7.5	0.8
DLH	1725	0	5	1.5	0.1	1706	0	5	0	6.3	0.8
EDW	51	0	4	2.1	-0.4	50	0	2	0	7.6	1.7
EEZ	93	0	100	3.7	2.9	90	0	8	0	11.3	-0.9
EIA	254	1	41	1.5	0.3	251	0	41	0	7.5	1.6
ELY	79	0	0	1.3	0.1	79	0	0	0	5.3	0.6
ETH	44	0	16	1.8	0.1	45	0	16	0	7.7	0.3
EVA	622	0	5	1.7	-0.2	622	0	6	0	6.9	0.3
EWV	142	0	1	1.2	0.1	141	0	1	0	5.6	1.3
FDX	2271	1	37	1.6	0.4	2261	0	37	0	7.0	0.7
FIN	408	0	5	1.4	0.3	394	0	6	0	5.5	1.0
FJI	831	1	47	1.3	0.3	811	0	48	0	9.2	0.3

IDENT.	N.REP.	TEMPERATURE				N.REP.	WIND				BIAS
		PG	PR	RMS	BIAS		PG	PR	PC	RMS	
FOM	513	1	31	1.2	0.0	503	0	31	0	6.4	0.9
FWQ	120	4	57	1.1	0.3	121	0	55	0	5.8	-0.7
GAF	71	0	4	1.5	-0.6	71	0	4	0	6.7	0.7
GCO	191	0	15	1.4	0.3	193	0	100	0	11.8	3.7
GFA	21	0	0	0.7	0.4	21	0	0	0	5.0	2.0
GHA	109	0	6	1.7	-0.4	108	3	9	0	10.9	1.6
GIA	35	0	31	2.3	1.6	35	0	31	0	5.3	1.1
GRL	46	0	0	1.2	0.0	45	0	0	0	3.8	0.8
GTI	241	0	5	1.7	-0.6	240	0	5	0	6.4	0.0
HAL	4024	1	34	1.6	0.4	3986	0	34	0	8.8	1.6
HBI	25	0	0	2.2	1.6	24	0	4	0	8.8	0.3
HLF	146	0	6	1.7	-0.7	146	0	8	0	9.4	0.7
HRH	113	0	62	1.4	0.2	112	0	62	0	7.3	-0.8
HVN	68	1	7	1.8	0.6	66	0	5	0	6.6	-0.9
HZM	21	5	5	2.0	0.3	25	0	0	0	8.7	-0.6
IBE	3179	1	6	1.7	0.3	3165	1	7	0	8.9	0.6
ICE	1133	0	3	1.4	0.1	1068	0	4	0	7.2	1.4
IRL	21	0	5	3.3	2.9	21	0	5	0	5.7	1.6
IWD	170	0	1	1.2	-0.6	171	0	4	0	10.6	0.8
JAA	78	1	8	2.2	1.1	78	0	5	0	9.4	2.6
JAL	6056	0	5	1.8	0.2	6053	0	5	0	8.0	0.9
JAZ	906	0	3	1.9	0.9	912	1	4	0	8.2	0.9
JKK	305	2	8	1.4	-0.1	295	0	9	0	8.2	2.3
JMC	194	1	3	1.4	0.7	174	1	6	0	7.4	0.9
KAL	3402	1	10	1.7	-0.1	3392	0	10	0	8.2	0.6
KLM	2424	0	8	1.6	0.2	2415	0	8	0	6.9	0.9
LAN	101	7	16	2.6	1.3	118	2	14	0	11.3	1.4
LAP	46	0	20	2.5	1.3	45	0	18	0	6.2	-0.9
LDA	77	0	5	1.3	0.0	76	0	5	0	6.7	1.2
LDI	901	0	3	1.6	-0.6	903	1	4	0	8.1	0.5
LIB	719	1	10	1.7	0.7	712	0	10	0	8.5	0.6
LOT	210	0	4	1.4	-1.0	206	0	6	0	6.5	0.2
LPR	23	0	13	1.7	1.1	23	0	13	0	8.2	-0.1
LTU	406	0	3	1.5	-0.3	399	0	4	0	7.4	1.2
MAH	21	0	5	1.0	0.0	21	0	5	0	5.4	1.1
MAS	471	0	6	1.8	0.4	474	1	65	0	8.2	0.2
MON	67	0	0	1.4	-0.4	68	0	1	0	6.3	0.2
MPD	260	1	3	1.6	0.0	258	0	4	0	10.1	0.3
MPH	719	0	2	1.8	-0.9	725	0	3	0	6.6	1.1
NCA	750	0	3	1.7	0.1	739	0	4	0	7.4	0.8
NWA	11441	1	12	1.7	0.5	11401	0	12	0	7.4	0.7
NZL	2096	0	9	0.9	0.0	2096	0	8	0	4.8	0.7
OAE	112	2	36	1.7	0.0	111	0	34	0	9.8	2.3
PAC	476	1	28	1.7	0.3	484	0	28	0	8.2	1.7
PAL	1565	0	10	1.6	0.1	1513	0	11	0	8.7	1.1
PAO	655	1	57	1.4	0.1	640	0	57	0	7.6	0.4
PIC	26	0	0	1.3	-0.1	26	0	0	0	6.0	0.8
PUA	33	3	30	2.5	1.4	33	0	30	0	13.9	3.1
QFA	4632	0	56	1.4	0.4	4624	0	56	0	6.6	0.5
RAM	50	0	16	2.4	-0.4	50	4	14	0	6.6	1.1
RCH	277	2	15	2.4	0.4	252	0	100	0	11.0	2.0
RKA	84	1	5	1.6	-0.5	85	0	6	0	9.1	0.9
ROY	31	0	35	2.4	-0.5	31	0	32	0	15.1	1.5
RRR	43	0	2	2.3	0.3	45	0	4	0	8.7	-1.4
RYN	265	0	41	1.4	0.9	262	0	42	0	6.3	0.7
RZO	272	0	2	1.9	-0.4	270	1	61	0	9.2	1.7
SAA	437	1	4	1.7	-0.6	437	1	5	0	7.8	0.1
SIA	516	0	2	1.4	0.3	511	0	3	0	6.1	0.5
SLR	231	0	6	1.6	0.2	225	1	6	0	6.6	0.5

IDENT.	N.REP.	TEMPERATURE				N.REP.	WIND				
		PG	PR	RMS	BIAS		PG	PR	PC	RMS	BIAS
SOL	24	0	0	0.9	0.3	22	0	0	0	6.9	2.6
SVA	48	0	8	2.3	0.2	51	0	12	0	8.8	3.1
SWR	25	0	4	1.9	0.9	27	0	22	0	13.0	2.1
TAM	75	1	23	2.2	1.1	75	0	25	0	14.0	-0.1
TAP	569	1	4	1.5	-0.5	569	0	5	0	9.0	1.0
TBA	32	0	28	2.0	1.3	32	0	31	0	10.7	-1.3
THA	219	1	8	1.5	-0.1	217	2	100	0	11.9	0.0
THT	107	4	33	1.4	0.3	105	2	33	0	11.0	0.4
TPA	21	0	0	1.2	0.7	21	0	5	0	8.8	1.7
TSC	110	0	9	1.7	0.4	115	0	18	0	12.6	1.2
TWA	1616	1	27	1.5	0.2	1588	0	27	0	6.9	1.1
UAL	154420	0	100	1.2	-0.2	154282	0	100	0	5.2	0.5
UPS	1739	0	40	1.7	0.3	1739	0	40	0	7.3	0.7
USA	195	3	7	1.4	-0.3	161	0	6	0	7.0	1.7
VIR	606	1	4	1.5	0.0	614	0	5	0	6.7	0.9
VKG	88	0	2	1.7	0.1	90	1	7	0	8.4	0.5
VRG	339	5	23	2.2	1.3	346	1	100	0	13.2	0.7
WOA	221	0	5	1.7	0.1	238	0	8	0	8.4	0.7
YSS	55	2	5	1.9	0.4	56	0	2	0	6.0	0.7
AR	4624	1	100	2.9	2.6	4592	0	7	0	6.0	1.3
AU	60930	0	15	1.2	0.5	60927	0	15	0	5.2	0.5
EU	115698	0	24	1.3	0.2	115698	0	24	0	5.0	0.6
KL	6226	1	8	1.4	0.9	6200	0	7	0	5.8	0.8
LH	2725	0	7	1.5	0.9	2698	0	7	0	5.2	0.9
MK	3890	0	6	1.6	1.3	3856	0	56	0	5.9	0.8
SA	4404	0	18	1.5	1.0	4401	0	10	0	6.2	0.5
SV	1615	0	100	2.7	2.5	1590	0	5	0	6.1	1.0
WA	382	5	10	1.5	0.6	376	6	100	0	13.5	-1.4
XX	4956	1	8	1.6	0.3	4923	0	9	0	9.9	0.9
N	670	1	20	2.0	0.5	703	0	20	0	8.2	0.9
ACARS	831089	1	56	1.3	0.3	831005	0	55	0	5.5	0.8

TABLE 4B

**MONTHLY MONITORING OF AIRCRAFT OBSERVATIONS
MONITORING CENTRE: BRACKNELL
MONTH: MARCH 2001**

Monitoring procedures

Period	:One calendar month.	
Data monitored	:Statistics for each airline carrier.	
Area monitored	:90°N - 90°S, 180°W - 180°E.	
Standard of comparison	:Background field from UKMO global model.	
Observation times	:All hours combined.	
Level(s) monitored	:1000.0 – 300.1 hPa	
Elements monitored	:TEMP in °C ; WIND in m s ⁻¹	
Parameters monitored	:N REP.	:Number of observations received excluding duplicates.
	:PG	:Percentage of observations with gross errors.
	:PR	:Percentage of observations rejected by quality control including rejections from the duplicate check.
	:PC	:Percentage of observations with calm winds.
	:RMS	:Root Mean Square difference of observations from background values excluding those with gross errors in Temperature & vector wind.
	:BIAS	:Mean difference of observations from background values excluding those with gross errors in Temperature & Wind Speed.
GROSS ERROR LIMITS	:10.0 °C ; 60 m s ⁻¹ Vector Wind	
SELECTION CRITERIA	:N REP ≥ 20	

NB: All American ACARS data are grouped together and statistics are shown at the bottom of the table as "US ACARS". All ADS reports are similarly grouped together.

IDENT.	N.REP.	TEMPERATURE				N.REP.	PG	WIND			
		PG	PR	RMS	BIAS			PR	PC	RMS	BIAS
AAL	343	1	21	1.2	-0.2	347	0	20	0	7.4	1.1
AAR	22	5	32	1.8	-1.4	21	0	29	0	7.5	0.9
AFR	126	0	7	1.6	-0.1	125	0	9	0	7.0	1.0
AME	22	0	23	3.4	2.6	23	0	26	0	16.5	1.9
ANA	27	0	7	1.9	0.3	27	0	7	0	6.7	-0.2
ANZ	170	11	29	1.0	0.1	172	0	24	0	9.2	1.0
AOM	91	1	4	1.9	1.0	91	2	8	0	8.7	0.4
ARG	20	0	20	4.0	1.3	25	0	4	0	6.5	2.1
AXF	43	0	33	1.2	0.4	42	0	36	0	4.5	0.8
BAF	37	0	8	1.8	0.1	37	0	11	0	12.6	1.0
CES	21	5	52	2.2	0.2	22	0	45	0	11.9	3.2
CFC	88	0	6	1.7	0.6	88	0	5	0	6.5	1.1
CFG	43	2	9	1.8	-1.0	41	0	10	0	9.8	1.5
CLX	27	0	4	2.1	-0.5	27	0	4	0	6.1	-0.2
CMI	46	0	4	1.4	0.1	47	0	6	0	11.6	5.9
COA	152	0	32	1.2	0.3	153	0	35	0	8.7	1.5
CUB	76	0	1	2.0	1.5	76	0	3	0	7.0	0.7
DAF	24	4	4	3.0	1.5	23	0	0	0	4.4	-0.1
DAL	368	0	43	1.3	0.0	372	1	44	0	5.9	0.5
DHL	49	0	37	5.6	-4.9	48	0	4	0	9.1	1.0
DLH	232	0	12	1.3	0.2	232	0	12	0	5.8	1.0
EIA	30	13	57	2.2	-0.6	29	0	48	0	8.6	-0.4
EVA	59	0	27	1.2	-0.7	59	0	27	0	6.6	1.1
EWV	80	0	4	1.5	0.2	80	0	10	0	9.6	2.3
FDX	340	1	24	1.5	0.7	344	0	25	0	8.2	0.6
GAF	45	0	4	1.4	0.4	44	0	7	0	9.2	0.1
GCO	331	0	7	1.4	0.2	329	0	100	0	14.6	4.2
GHA	53	4	17	1.7	-0.8	53	2	15	0	12.4	-0.1
HAL	149	3	41	1.7	-0.1	143	1	41	0	10.0	1.3
IBE	113	0	12	1.4	0.0	114	0	13	0	9.2	-0.2
ICE	101	1	2	1.3	-0.3	100	0	2	0	6.6	1.2
JAA	34	0	21	2.3	-0.4	34	0	18	0	7.8	2.8
JAL	240	2	11	1.8	0.3	242	0	10	0	9.4	2.1
JAZ	255	0	6	1.9	1.3	260	1	7	0	8.2	0.8
KAL	73	1	21	1.3	-0.4	75	0	20	0	5.9	0.3
KIW	64	2	41	2.5	1.5	63	0	40	0	6.9	0.1
KLM	132	0	9	1.5	0.6	132	0	11	0	10.1	1.0
LAN	128	4	6	2.7	0.6	170	0	3	0	10.5	4.0
LDI	30	0	3	1.2	-0.9	29	0	3	0	5.5	0.0
LIB	96	1	3	1.7	1.1	98	1	2	0	5.8	0.6
MAS	30	0	37	0.8	-0.3	30	0	53	0	3.5	0.0
MPH	49	0	4	1.5	-0.2	49	0	6	0	8.6	-0.7
NCA	96	0	4	1.8	-0.6	92	0	4	0	10.2	1.4
NWA	342	3	24	1.5	0.6	342	0	23	0	7.9	1.0
NZL	5632	0	50	1.3	0.3	5632	0	50	0	4.4	0.5
PAC	46	0	20	1.7	-0.2	46	0	20	0	6.0	0.7
PAL	43	9	12	1.3	-0.3	41	0	7	0	6.0	0.2
QFA	271	5	50	1.3	0.1	268	0	48	0	6.4	0.8
RCH	181	3	6	2.5	0.5	177	1	100	0	15.0	4.0
RRR	218	4	17	4.0	2.9	210	0	10	0	9.2	0.7
SAA	60	2	2	1.2	-0.6	60	0	0	0	6.3	-0.4
SIA	49	0	0	1.1	0.0	49	0	2	0	9.3	-0.3
SWR	45	0	13	1.5	0.3	46	0	39	0	17.7	6.8
THA	20	0	0	0.8	0.4	21	0	100	0	11.6	-0.2
TWA	22	0	14	1.3	-0.2	23	0	13	0	4.7	0.0
UAL	244345	0	100	1.2	-0.1	243887	0	100	0	4.5	0.2
UPS	136	0	31	1.3	0.1	138	0	32	0	5.7	1.2
VHJ	75	1	3	1.9	0.1	73	0	1	0	8.3	0.9
VVR	24	0	38	2.9	-0.8	27	0	33	0	5.8	1.3

AR	3309	1	100	2.0	1.3	3291	0	55	0	5.1	0.7
AU	110768	0	68	1.3	-0.1	110766	0	68	0	4.1	0.4
EU	477233	0	71	1.1	0.1	475872	0	71	0	4.3	0.1
KL	4882	0	54	1.4	0.7	4855	0	54	0	4.2	0.3
LH	949	0	65	1.4	0.3	938	0	65	0	4.0	0.8
MK	3169	0	52	1.3	0.6	3140	0	71	0	4.2	0.6
SA	2812	0	58	1.5	0.4	2813	0	57	0	4.3	0.8
SV	2578	0	100	3.4	3.2	2549	0	42	0	4.8	0.7
WA	78	8	13	1.4	0.1	78	6	100	0	17.2	-6.6
XX	1284	4	9	1.6	0.2	1270	1	14	0	13.2	1.2
N	34	0	38	5.2	-2.6	33	0	30	0	7.6	0.4
ACARS	1148227	0	70	1.3	0.3	1144897	0	71	0	4.7	0.2

Figure 3a. AIRCRAFT 300 - 150 hPa mean daily count. MARCH 2001

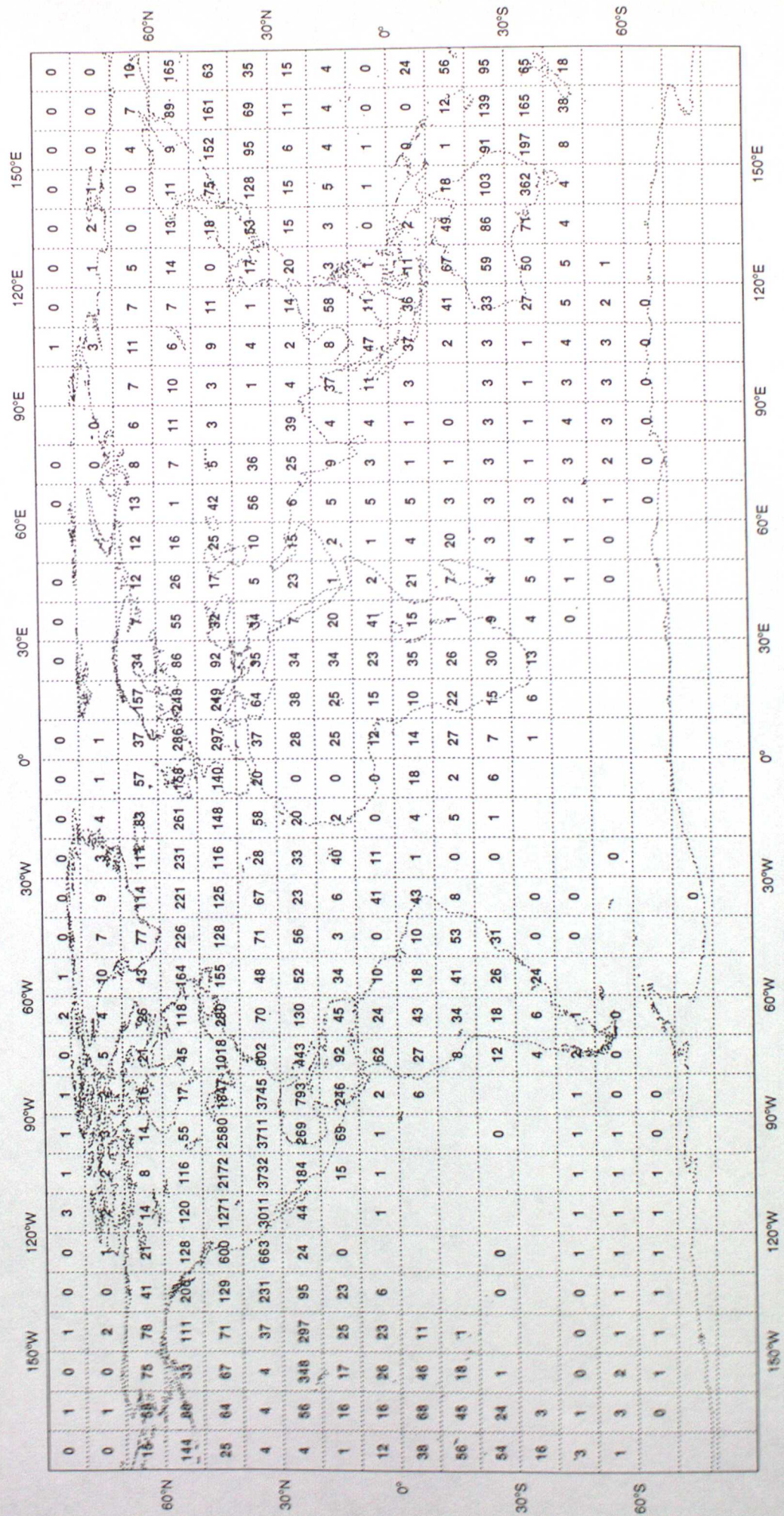


Figure 3b. AIRCRAFT 1000 - 301 hPa mean daily count. MARCH 2001
Observations with O-B vector difference greater than 60 ms-1 excluded
Global average number of observations in 24 hours = 64728

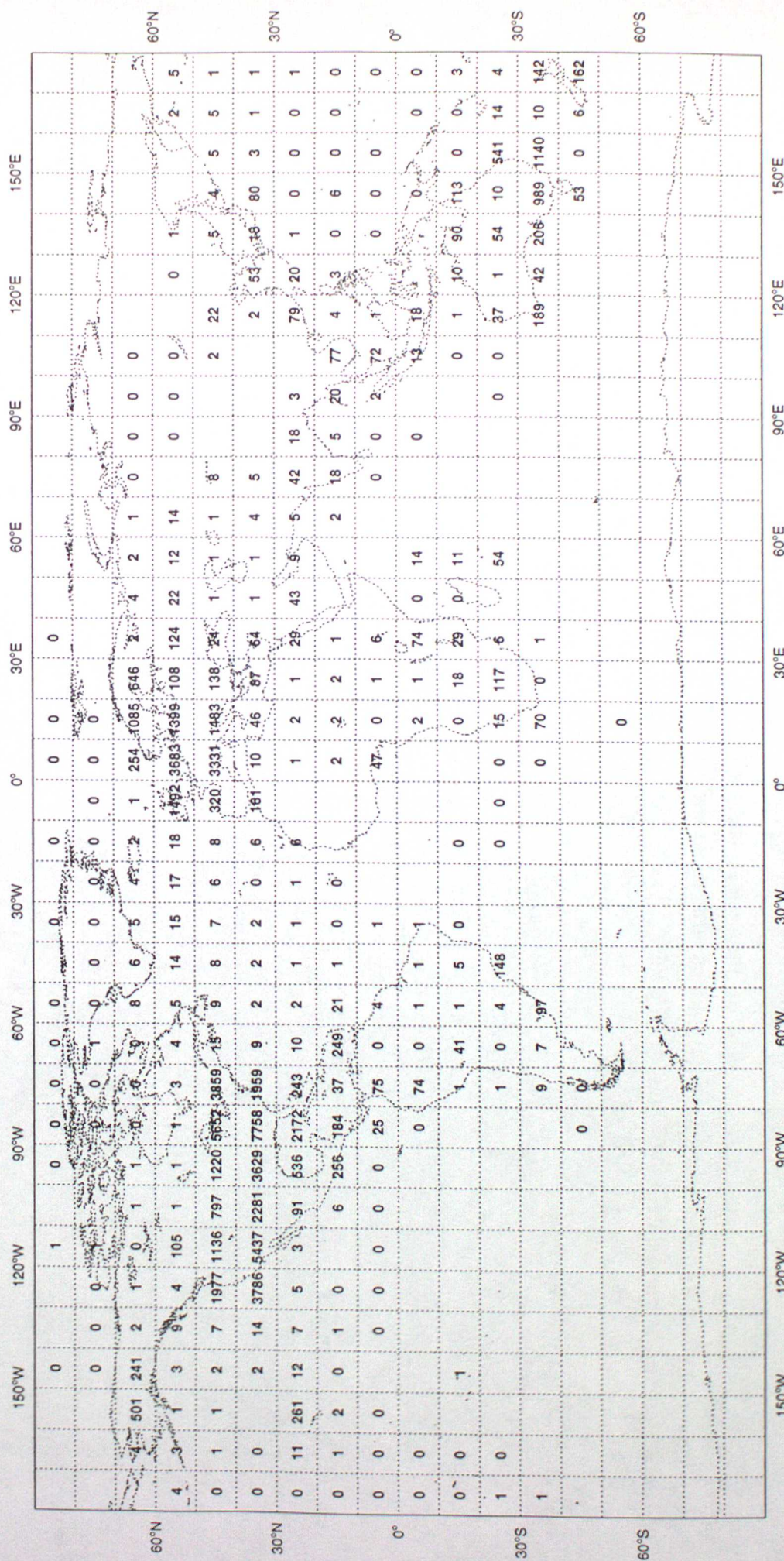


Figure 4a. AIRCRAFT 300 - 150 hPa mean winds. MARCH 2001
 Observations with O-B vector difference greater than 60 ms-1 excluded
 Arrows are plotted where greater than 30 obs are present

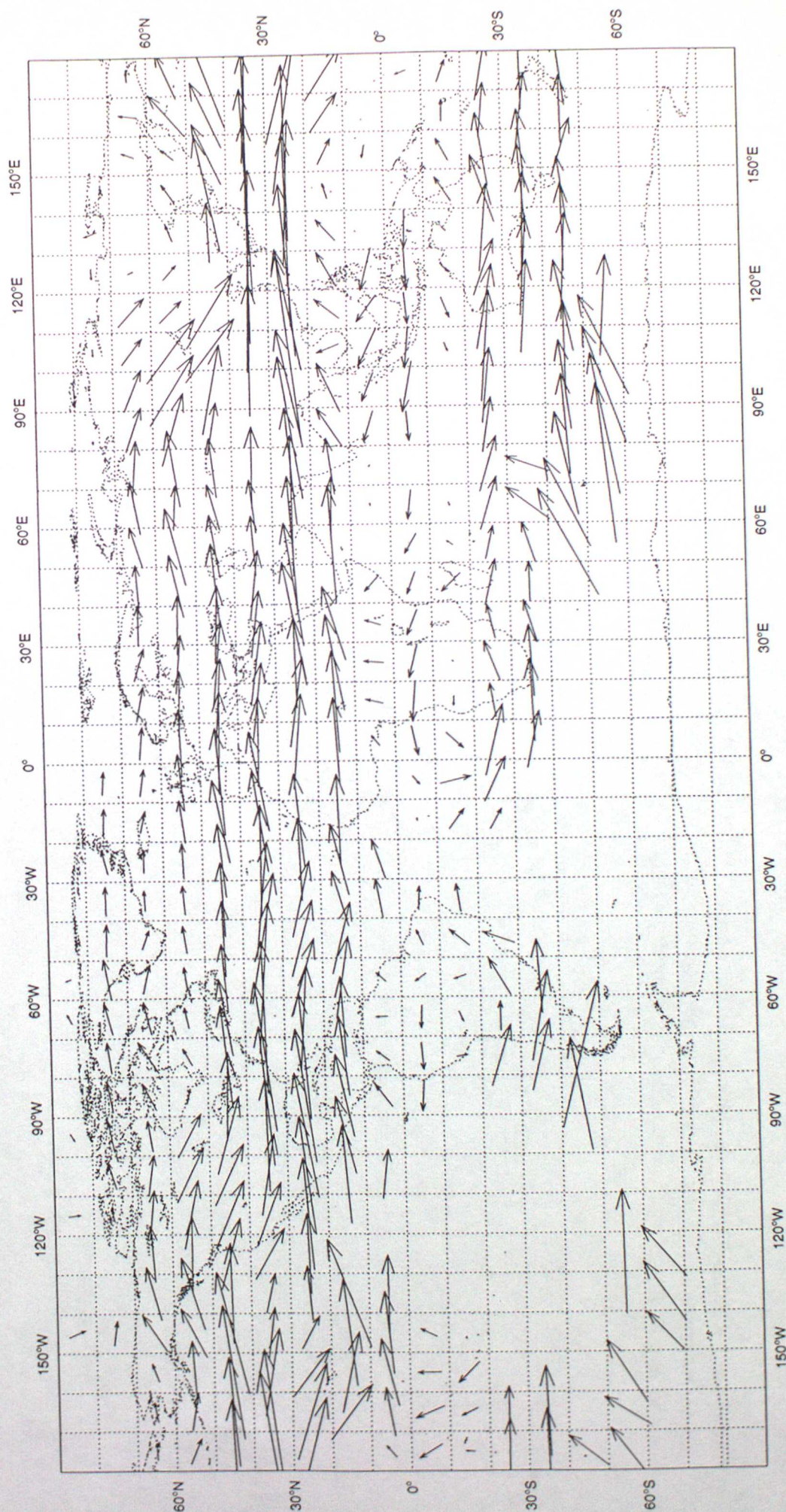


Figure 4b. AIRCRAFT 1000 - 301 hPa mean winds. MARCH 2001
 Observations with O-B vector difference greater than 60 ms⁻¹ excluded
 Arrows are plotted where greater than 30 obs are present

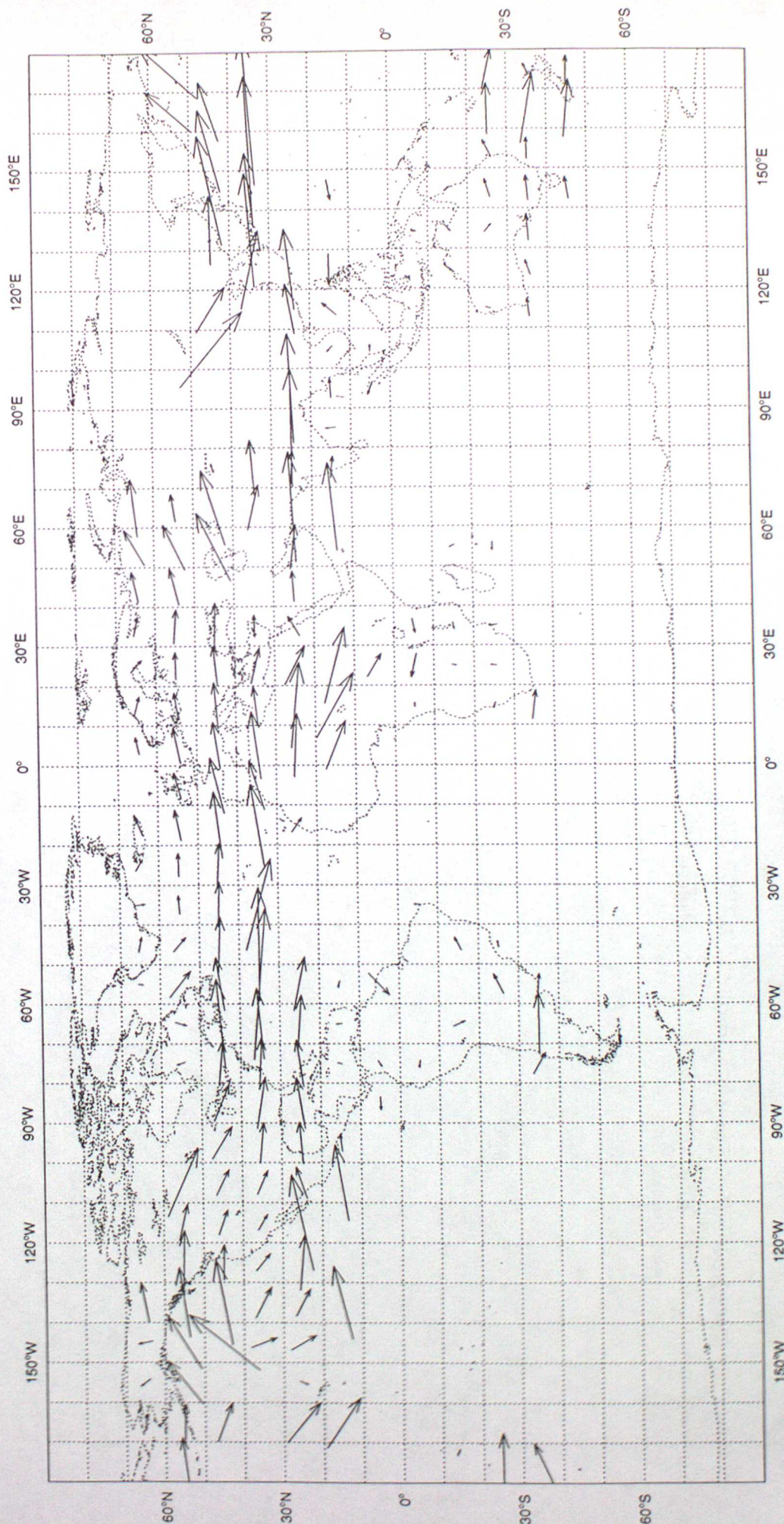


Figure 5a. AIRCRAFT 300 - 150 hPa mean O-B winds. MARCH 2001
 Observations with O-B vector difference greater than 60 ms⁻¹ excluded
 Arrows are plotted where greater than 30 obs are present

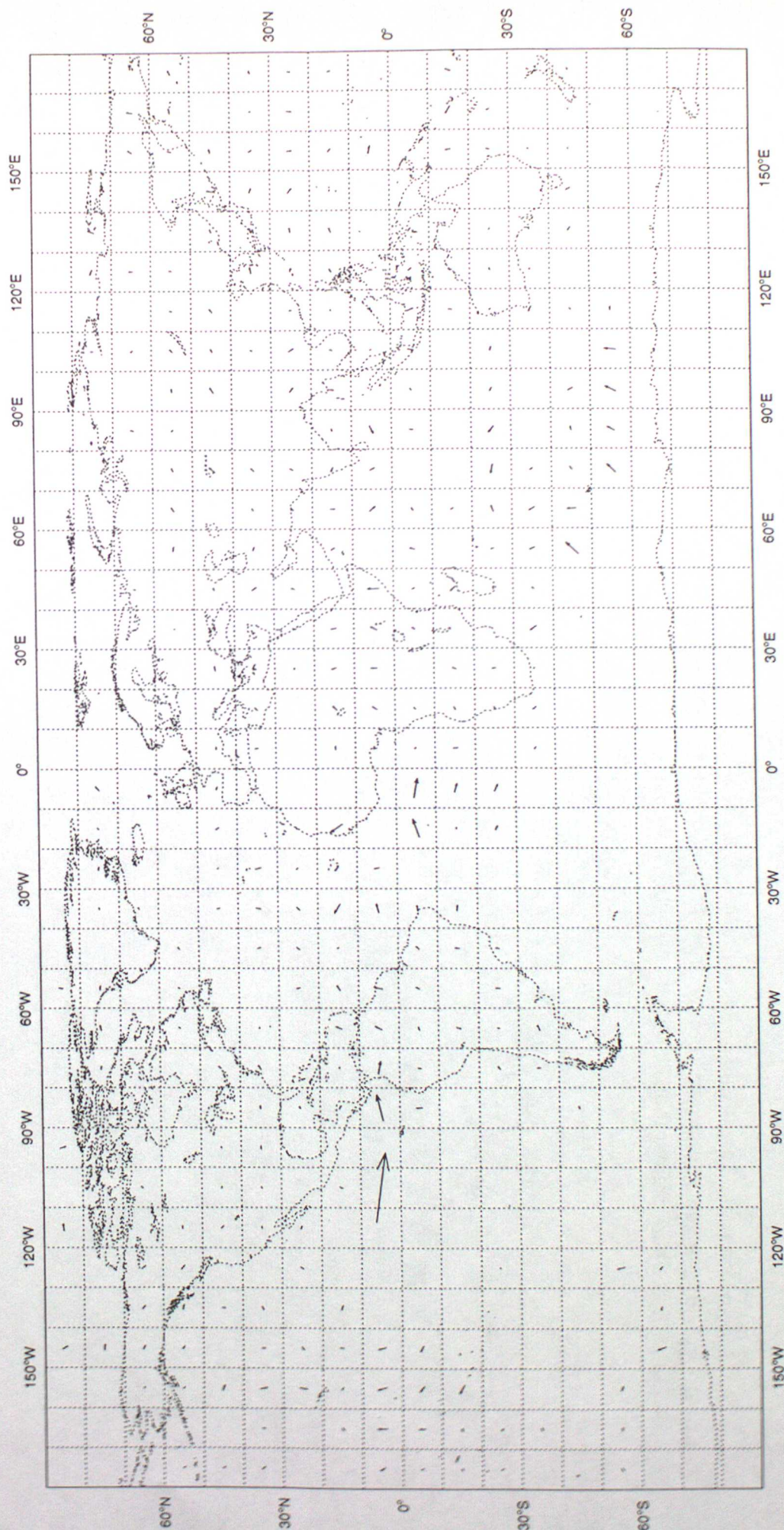


Figure 5b. AIRCRAFT 1000 - 301 hPa mean O-B winds. MARCH 2001
 Observations with O-B vector difference greater than 60 ms⁻¹ excluded
 Arrows are plotted where greater than 30 obs are present

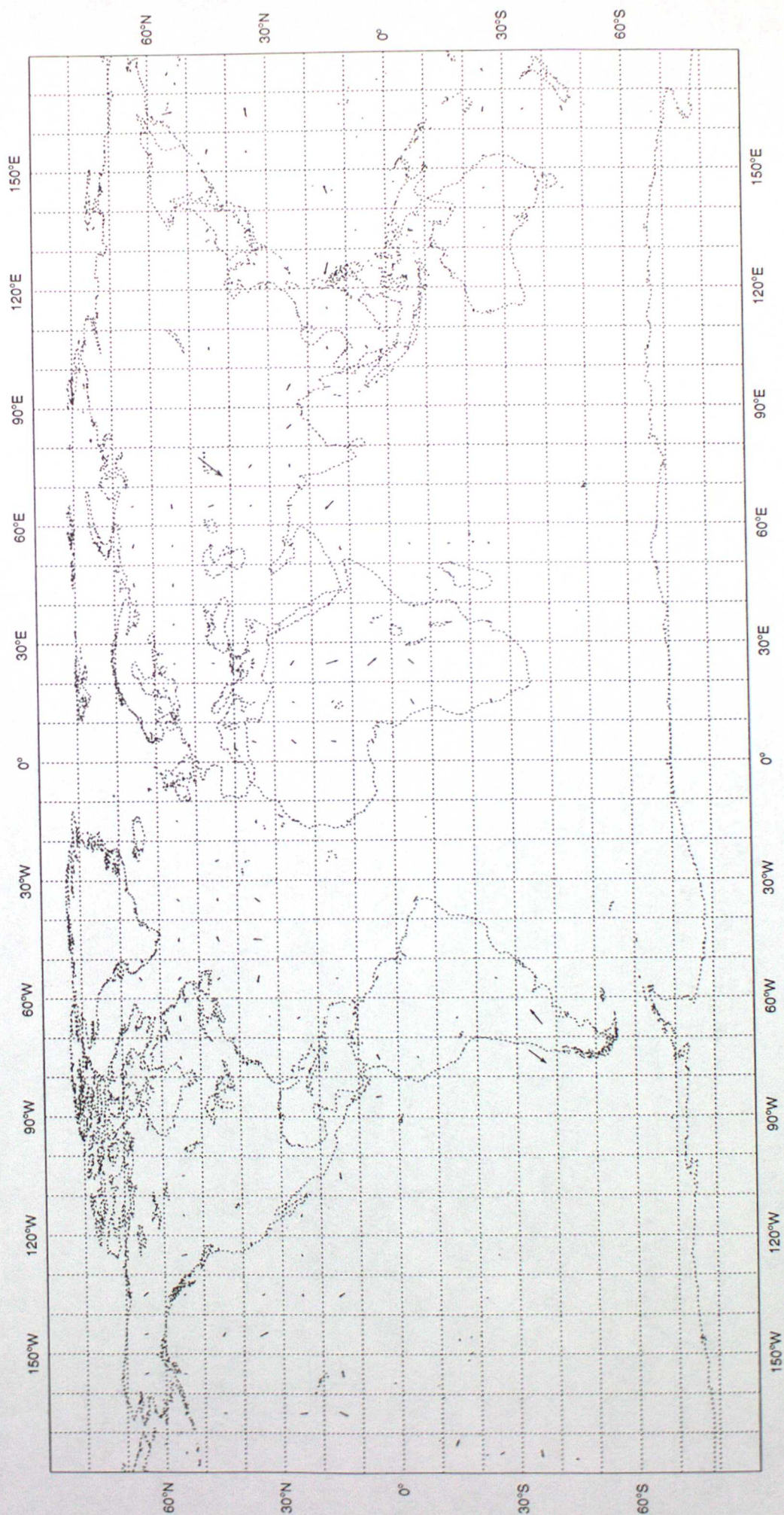


Figure 6a. AIRCRAFT 300 - 150 hPa mean O-B speeds (ms-1). MARCH 2001
 Observations with O-B vector difference greater than 60 ms-1 excluded
 Values are printed where greater than 30 obs are present

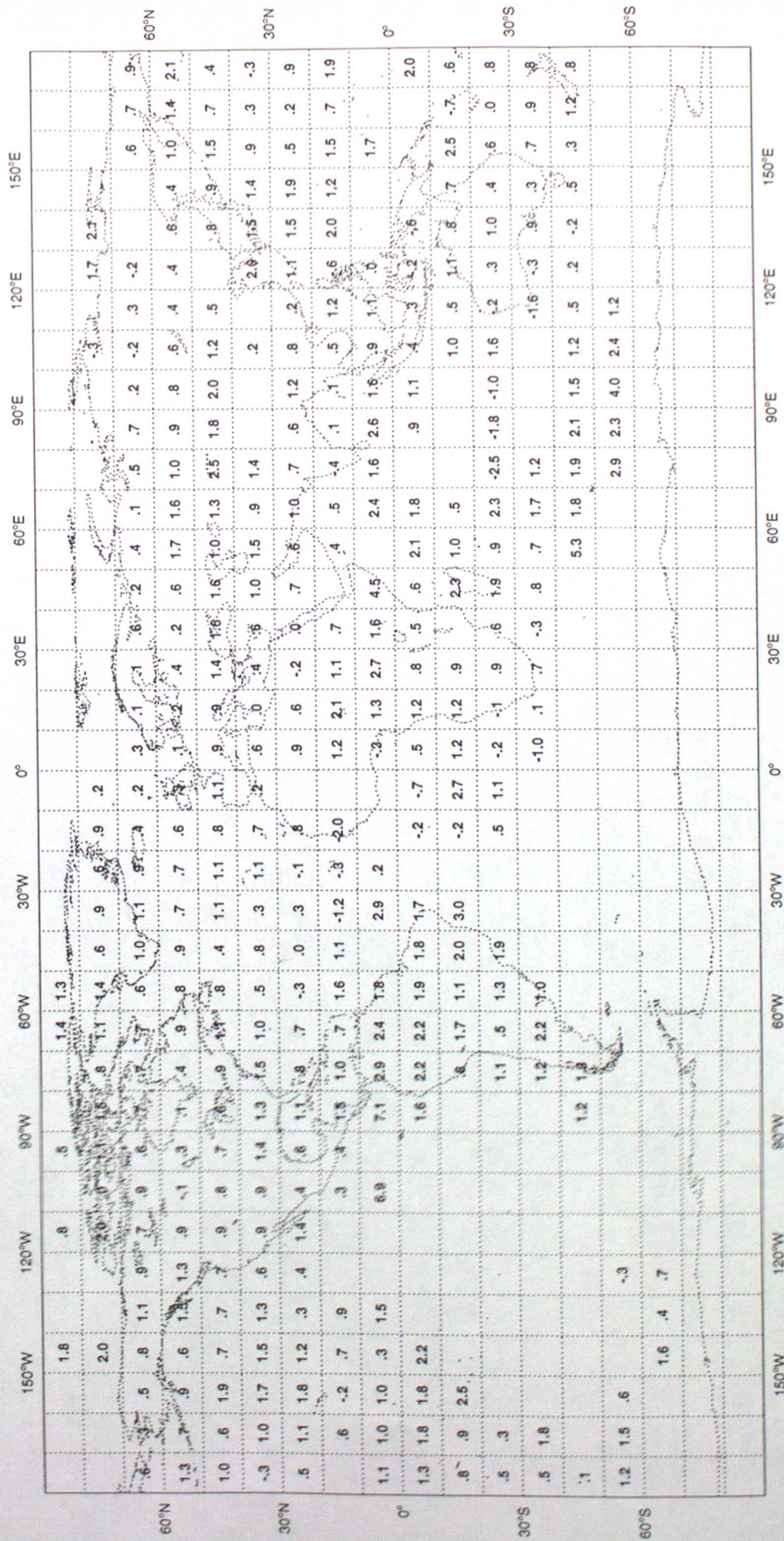


Figure 7a. AIRCRAFT 300 - 150 hPa RMS O-B vector (ms-1). MARCH 2001
 Observations with O-B vector difference greater than 60 ms-1 excluded
 Values are printed where greater than 30 obs are present

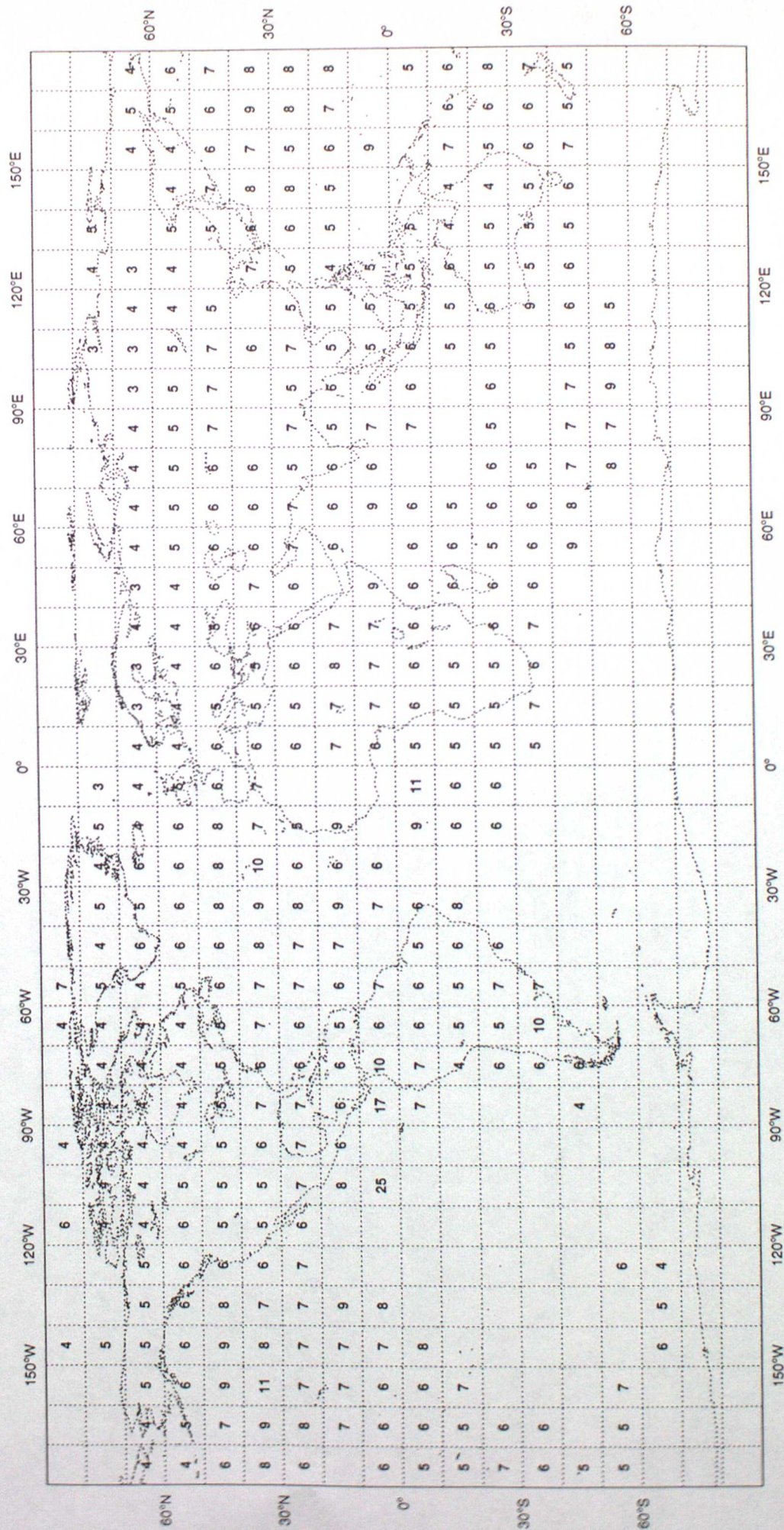


TABLE 5

**MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS
MONITORING CENTRE: BRACKNELL
MONTH: MARCH 2001**

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from each unique identifier for radiosonde TEMPs.
Area monitored		:90°N - 90°S, 180°W - 180°E.
Standard of comparison		:Background field from UKMO global model.
Observation times		:00 UTC and 12 UTC.
Level(s) monitored		:Standard levels between 1000.0 - 30.0 hPa
Element monitored		:GEOPOTENTIAL HEIGHT IN metres
Parameters monitored	:NUM OBS	:Number of observations available at level shown during period.
	:NUM GROSS	:Number of gross errors at level shown during period.
	:% REJ	:Percentage of observations rejected by quality control at level shown during period excluding those with gross errors.
	:SD	:SD of difference of observations from background values at level shown excluding those with gross errors.
	:BIAS	:Mean difference of observations from background values at level shown excluding those with gross errors.
	:RMS	:Root Mean Square difference of observations from background values at level shown excluding those with gross errors.
	:NUM LEVELS	:Number of levels satisfying selection criteria.
GROSS ERROR LIMITS	:Defined in Appendix I.1	
SELECTION CRITERIA	: ≥3 levels with ≥10 observations and ≥ 100 m weighted RMS.	

ONLY THE WORST LEVEL IS SHOWN WITH UNWEIGHTED RMS

WMO IDENT	OBS TIME	ELM	LEV	LAT/LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS	NUM LEVELS
23933	00	Z	30	61/ 69	15	0	92.9	243.7	260.8	5
26477	12	Z	50	56/ 31	13	1	67.4	176.5	188.9	4
32098	00	Z	100	49/ 143	28	0	42.8	137.3	143.8	4
34247	12	Z	30	50/ 41	22	0	44.1	232.0	236.1	4
42027	00	Z	250	34/ 75	9	2	96.5	-91.1	132.7	6
42101	12	Z	50	30/ 76	21	2	91.1	215.5	234.0	8
42339	00	Z	150	26/ 73	10	2	116.4	30.4	120.3	6
42361	00	Z	50	26/ 78	11	0	84.4	141.6	164.9	5
42361	12	Z	250	26/ 78	15	0	98.4	-46.7	108.9	7
42379	00	Z	50	27/ 83	17	1	87.3	214.1	231.2	6
42397	00	Z	250	27/ 88	13	0	49.2	-110.0	120.5	4
42397	12	Z	200	27/ 88	12	0	108.1	-37.9	114.5	6
42647	12	Z	150	23/ 73	12	0	61.9	192.6	202.3	8
42701	12	Z	50	23/ 85	15	0	97.0	143.7	173.4	5
42724	12	Z	70	24/ 91	12	1	145.3	-92.4	172.2	7
42971	00	Z	50	20/ 86	23	1	93.9	231.8	250.1	7
42971	12	Z	70	20/ 86	22	0	93.1	135.5	164.3	4
43003	00	Z	100	19/ 73	9	2	117.0	82.3	143.1	7
43003	12	Z	70	19/ 73	1	9	0.0	331.0	331.0	9
43128	00	Z	150	17/ 78	27	0	50.4	-107.2	118.5	6
43128	12	Z	50	17/ 78	24	0	118.9	166.0	204.2	4
43185	00	Z	200	16/ 81	24	0	59.6	-50.1	77.9	5
43192	00	Z	150	15/ 74	21	0	67.6	-134.5	150.5	8
43279	00	Z	150	13/ 80	28	0	56.5	-85.0	102.0	4
43279	12	Z	30	13/ 80	12	1	111.6	224.3	250.6	6
43285	12	Z	50	13/ 75	10	0	112.4	198.0	227.7	8
43311	12	Z	30	11/ 73	13	0	87.8	255.2	269.8	6
43333	00	Z	200	12/ 93	23	0	68.5	-67.6	96.2	7
43353	00	Z	100	10/ 76	18	0	91.3	-88.4	127.1	4
43353	12	Z	200	10/ 76	22	0	63.5	59.5	87.1	4
43369	12	Z	50	8/ 73	20	0	96.7	264.8	281.9	9
43371	00	Z	150	8/ 77	27	0	58.7	-75.5	95.7	4
43371	12	Z	50	8/ 77	23	2	100.4	163.5	191.9	7
44292	00	Z	1000	48/ 107	25	1	24.9	32.1	40.6	5
47185	00	Z	30	33/ 126	28	0	62.1	227.6	235.9	4
53463	00	Z	1000	41/ 112	30	0	27.8	30.4	41.2	9
53463	12	Z	200	41/ 112	24	0	33.2	75.7	82.7	4
82824	12	Z	50	-9/ -64	17	0	65.6	171.2	183.3	6
83612	12	Z	50	-20/ -55	10	0	61.0	175.6	185.9	4
83840	00	Z	200	-26/ -49	1	0	0.0	112.0	112.0	5
91366	00	Z	50	9/ 168	26	0	79.5	235.3	248.3	5

Figure 8. TEMP 500 hPa geopotential mean daily count. MARCH 2001

All hours

Global average number of observations in 24 hours = 1160

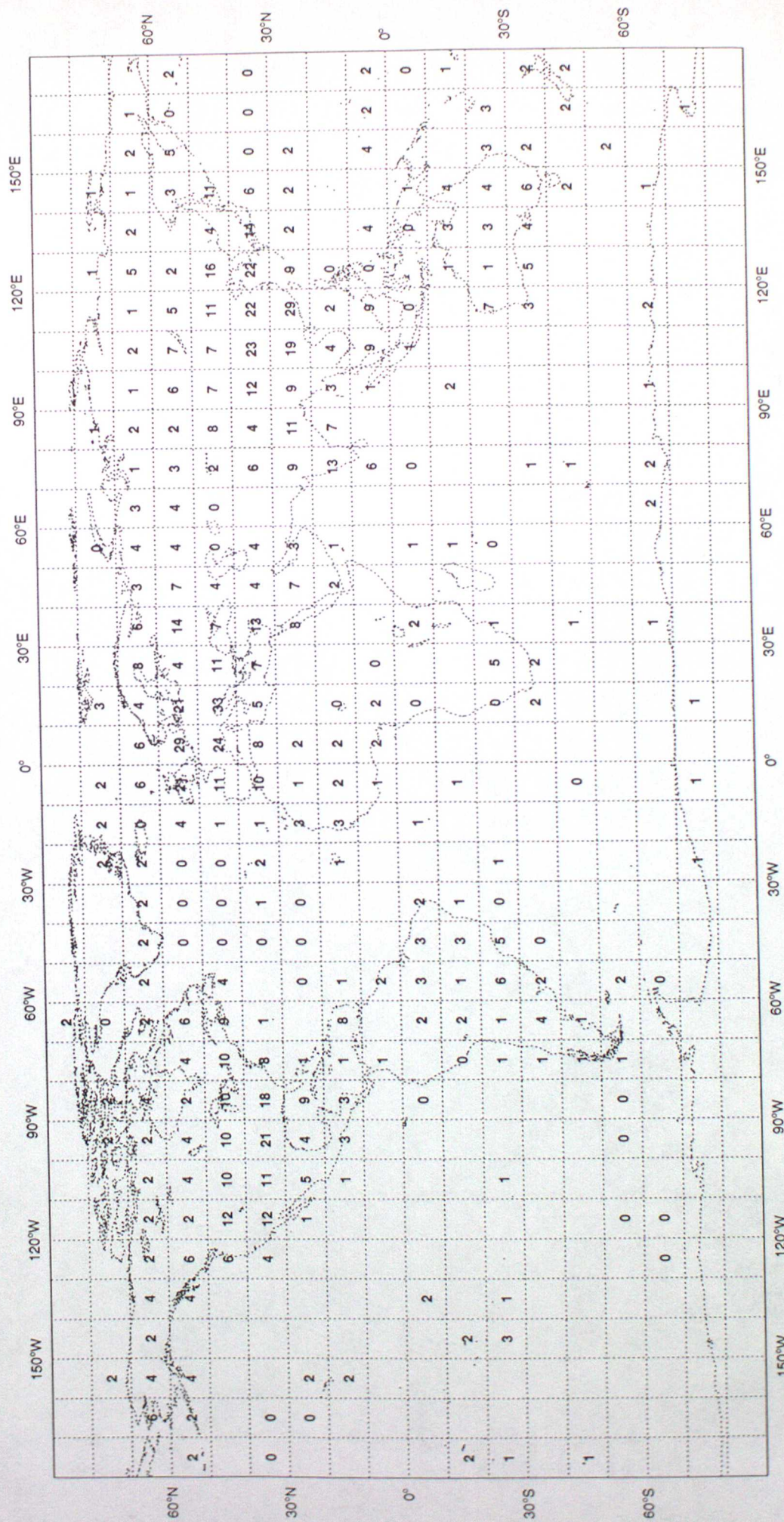


TABLE 6

**MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS
MONITORING CENTRE: BRACKNELL
MONTH: MARCH 2001**

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from each unique identifier for radiosonde TEMPs.
Area monitored		:90°N - 90°S, 180°W - 180°E.
Standard of comparison		:Background field from UKMO global model.
Observation times		:00 UTC and 12 UTC.
Level(s) monitored		:Standard levels between 1000.0 - 100.0 hPa
Element monitored		:VECTOR WIND in m s^{-1}
Parameters monitored		
	:NUM OBS	:Number of observations available at level shown during period.
	:NUM GROSS	:Number of gross errors at level shown during period.
	:% REJ	:Percentage of observations rejected by quality control at level shown during period excluding those with gross errors.
	:UBIAS,VBIAS	:Mean difference of observations of U and V components from background values at level shown excluding those with gross errors.
	:RMS	:Root Mean Square difference of observations from background values at level shown excluding those with gross errors.
	:NUM LEVELS	:Number of levels satisfying selection criteria.
GROSS ERROR LIMITS		:Defined in Appendix I.2
SELECTION CRITERIA		: ≥ 10 observations and $\geq 15 \text{ m s}^{-1}$ RMS vector wind.

**ONLY THE STANDARD LEVEL BETWEEN 1000 - 100 hPa WITH HIGHEST RMS
IS SHOWN**

WMO IDENT	OBS TIME	ELM	LEV	LAT/LONG		NUM OBS	NUM GROSS	% REJ	UBIAS	VBIAS	RMS	LEVELS
PSPIU	00	V	100	-5/	-81	29	0	100	-10.2	0.7	22.1	2
PSPIU	12	V	100	-5/	-81	27	0	100	-8.3	2.0	25.1	2
07481	12	V	200	46/	5	29	0	3	-1.3	1.5	16.1	1
17062	00	V	250	41/	29	18	0	5	1.0	5.4	15.1	1
40754	12	V	250	36/	51	11	0	9	-3.3	0.5	20.6	2
41950	12	V	500	23/	90	12	0	25	-8.8	-5.1	15.1	1
42182	00	V	150	29/	77	10	0	100	11.8	7.4	24.2	2
42397	12	V	200	27/	88	10	0	100	-10.6	-7.6	16.9	1
42667	12	V	250	23/	77	10	0	10	-15.5	5.6	38.6	1
42724	00	V	250	24/	91	13	0	100	-15.8	-10.7	27.5	2
42724	12	V	300	24/	91	16	0	100	-7.1	-3.4	25.9	1
42809	00	V	150	23/	88	10	0	60	-9.9	2.1	31.0	1
43003	12	V	250	19/	73	22	0	4	-11.6	1.6	15.2	1
43041	00	V	150	19/	82	11	0	9	-4.7	-1.1	33.6	1
44259	00	V	200	48/	115	27	0	3	0.9	3.8	17.6	1
48327	12	V	200	19/	99	16	0	6	-9.2	-6.1	17.4	1
50774	00	V	500	48/	129	31	0	3	-1.1	2.4	15.3	1
53845	12	V	200	37/	109	25	0	8	-7.5	1.1	20.0	4
54161	00	V	400	44/	125	31	0	100	-0.8	-0.3	17.1	1
54161	12	V	200	44/	125	26	0	100	-0.3	-2.1	15.3	1
56691	00	V	150	27/	104	30	0	100	-0.6	6.8	15.4	1
56691	12	V	100	27/	104	23	0	100	7.0	4.4	17.0	1
58362	00	V	150	31/	121	30	0	66	-4.1	0.5	16.1	1
58362	12	V	150	31/	121	30	0	63	-1.6	5.8	15.6	1
60360	12	V	300	37/	8	22	0	100	4.1	-4.7	15.1	2
60571	12	V	150	32/	-2	22	0	4	-5.1	-2.9	21.2	1
62378	00	V	150	30/	31	29	0	100	-5.3	-6.7	17.1	2
62378	12	V	150	30/	31	25	0	100	-6.6	-3.0	19.0	3
64500	12	V	150	0/	9	15	0	20	11.5	-3.1	17.6	1
68906	12	V	250	-40/	-10	10	0	10	-5.4	-0.7	15.4	1
71909	00	V	700	64/	-69	28	0	57	-10.4	-9.3	20.2	7
87623	12	V	250	-37/	-64	25	0	4	1.2	5.0	20.0	1
96035	00	V	150	4/	99	13	0	23	8.9	-0.1	16.5	1
97072	00	V	100	-1/	120	10	0	0	12.0	-1.2	16.1	1

Figure 9. TEMP/PILOT 300 hPa wind mean daily count. MARCH 2001

All hours

Global average number of observations in 24 hours = 1370

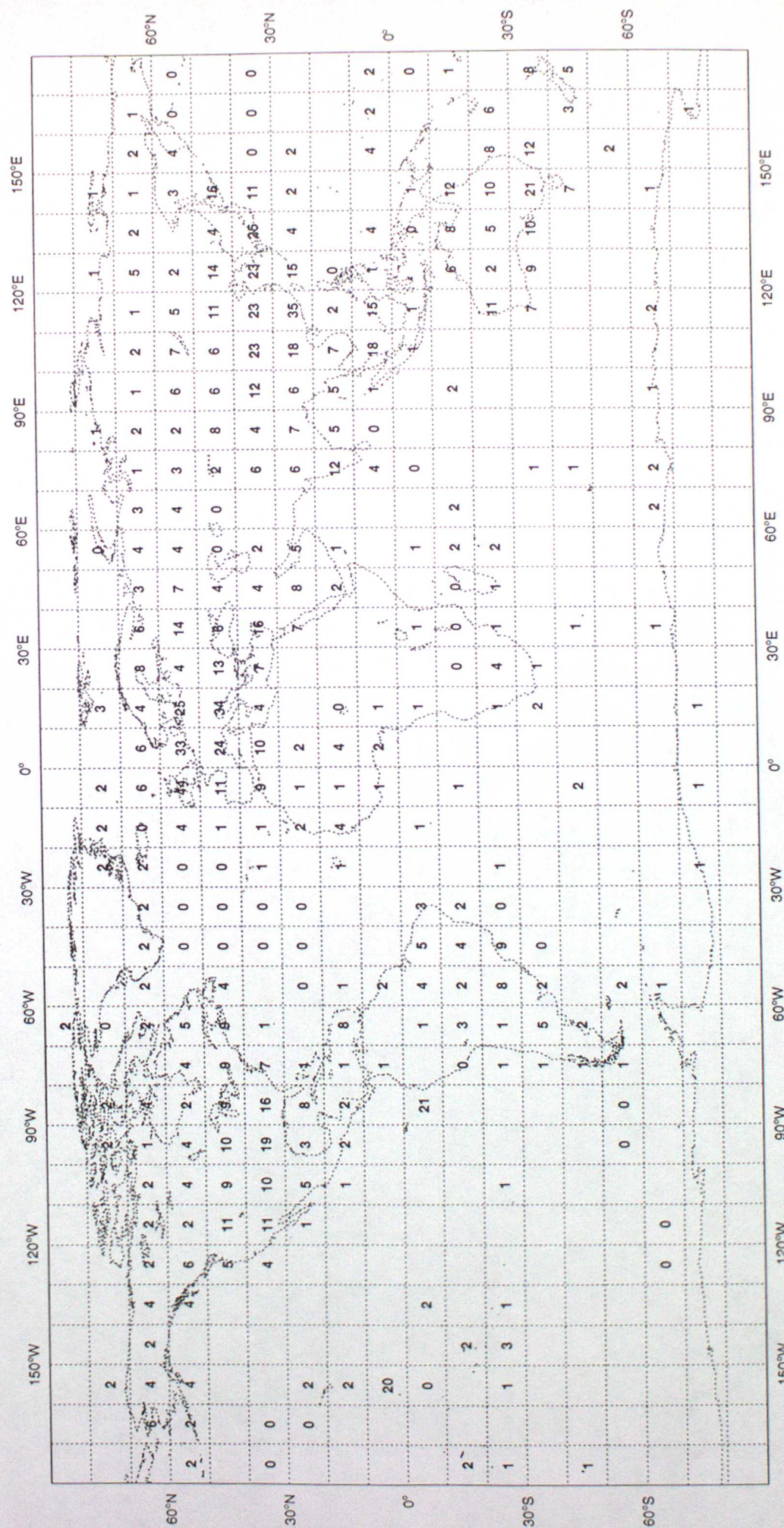


TABLE 7

**MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS
MONITORING CENTRE: BRACKNELL
MONTH: MARCH 2001**

Monitoring procedures

Period	:One calendar month.
Data monitored	:Reports from each unique identifier for radiosonde TEMPs.
Area monitored	:90°N - 90°S, 180°W - 180°E.
Standard of comparison	:Background field from UKMO global model.
Observation times	:00 UTC and 12 UTC.
Level(s) monitored	:Standard levels between 500.0 - 150.0 hPa
Element monitored	:WIND DIRECTION in degrees
Parameters monitored	
	:NUM OBS :Average number of observations at all levels.
	:BIAS :Mean difference of observations from background values from all levels.
	:MAX SPREAD : (For observation - background values) Maximum absolute difference of SD at any level from SD at all levels
	:SD :SD of difference of observations from background values at all levels.
SELECTION CRITERIA	:NUM OBS ≥ 5 , and ABSOLUTE BIAS $\geq 10^\circ$, with SD $< 30^\circ$, and MAX SPREAD $< 10^\circ$

WMO IDENT	OBS TIME	ELM	LAT/LONG	NUM OBS	BIAS	MAX SPREAD	SD
08594	12	DD	17/ -23	21	-11.8	9.3	14.6
17280	12	DD	38/ 40	28	-10.1	2.1	10.0
29612	12	DD	55/ 78	28	22.8	2.0	6.4
42397	12	DD	27/ 88	13	11.0	7.8	12.4
60360	12	DD	37/ 8	19	14.7	5.9	13.9
62337	00	DD	31/ 34	28	-15.4	4.0	11.4
62337	12	DD	31/ 34	27	-15.9	7.7	10.2
62378	00	DD	30/ 31	26	11.9	9.0	19.3
91366	00	DD	9/ 168	16	12.4	3.4	20.5
91366	12	DD	9/ 168	15	15.2	7.3	23.1

MONITORING OF SATELLITE WINDS

MONITORING CENTRE: BRACKNELL

MONTH: MARCH 2001

Monitoring procedures

Period :One calendar month.

Data monitored :Reports from GOES-8, GOES-10, METEOSAT-5, METEOSAT-7, GMS-5, INSAT.

Standard of comparison :Background field from UKMO global model.

Selection Criteria :number of observations > 10.

Data Extracted :Layer 701 - 1000 hPa
401 - 700 hPa
101 - 400 hPa

:Mean wind

:Mean observation minus background vector wind differences

:Mean observation minus background speed differences

:RMS of observation minus background vector differences

Global average number of observations in 24 hours = 19370

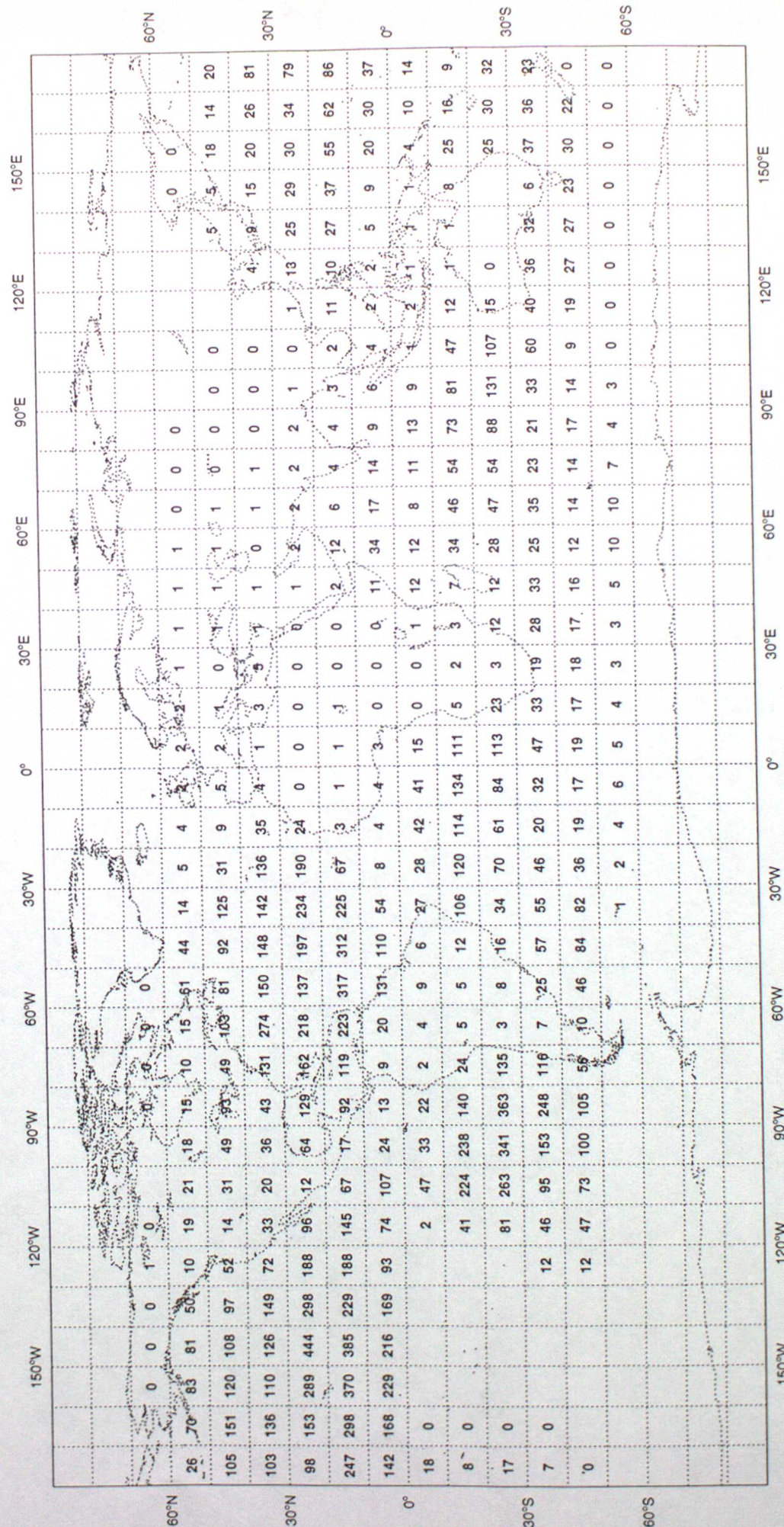


Figure 11. SATOB 701 - 1000 hPa vector mean wind. MARCH 2001

All observations

Arrows are plotted where greater than 10 obs are present

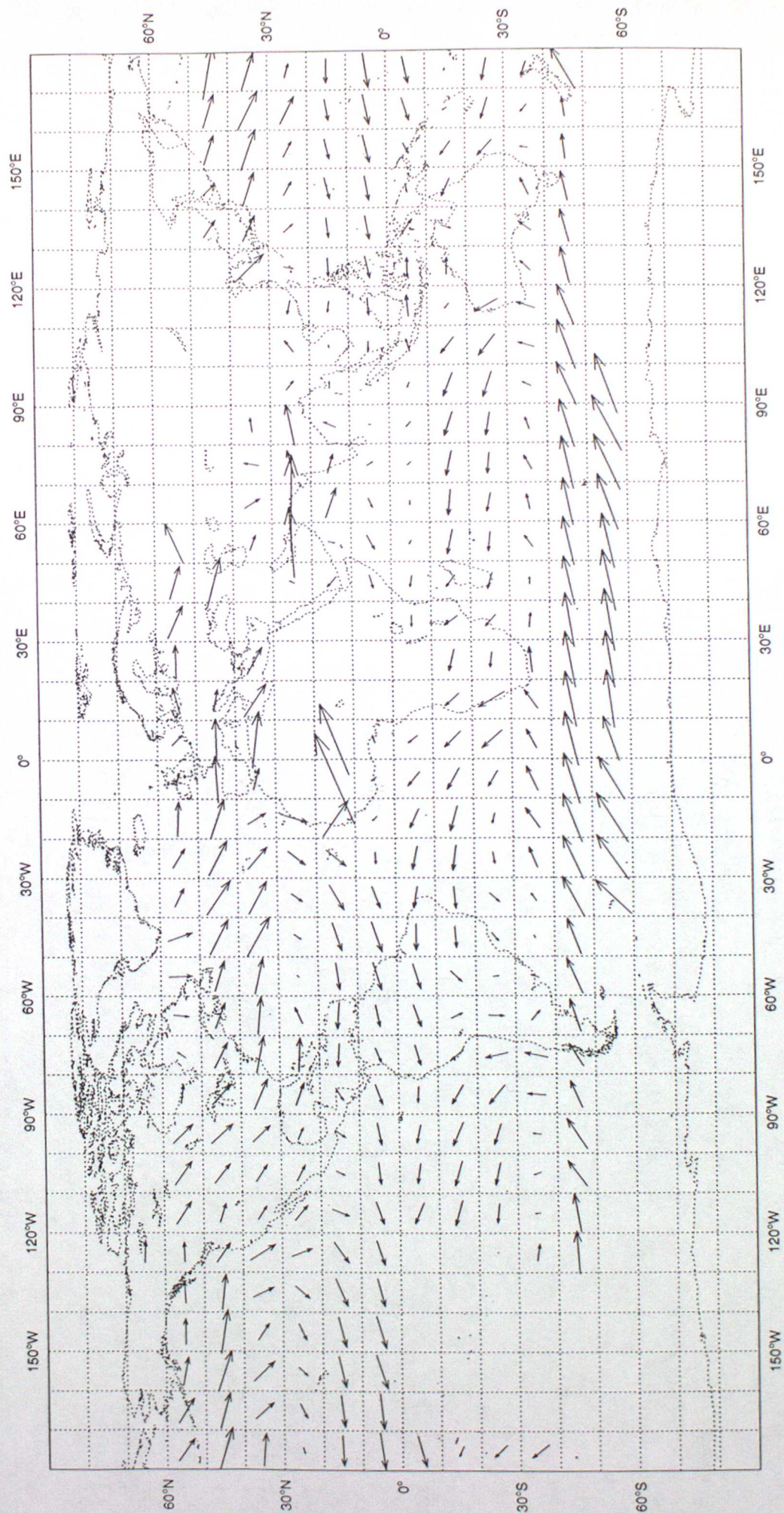


Figure 12. SATOB 701 - 1000 hPa vector wind differences. MARCH 2001

All observations

Arrows are plotted where greater than 10 obs are present

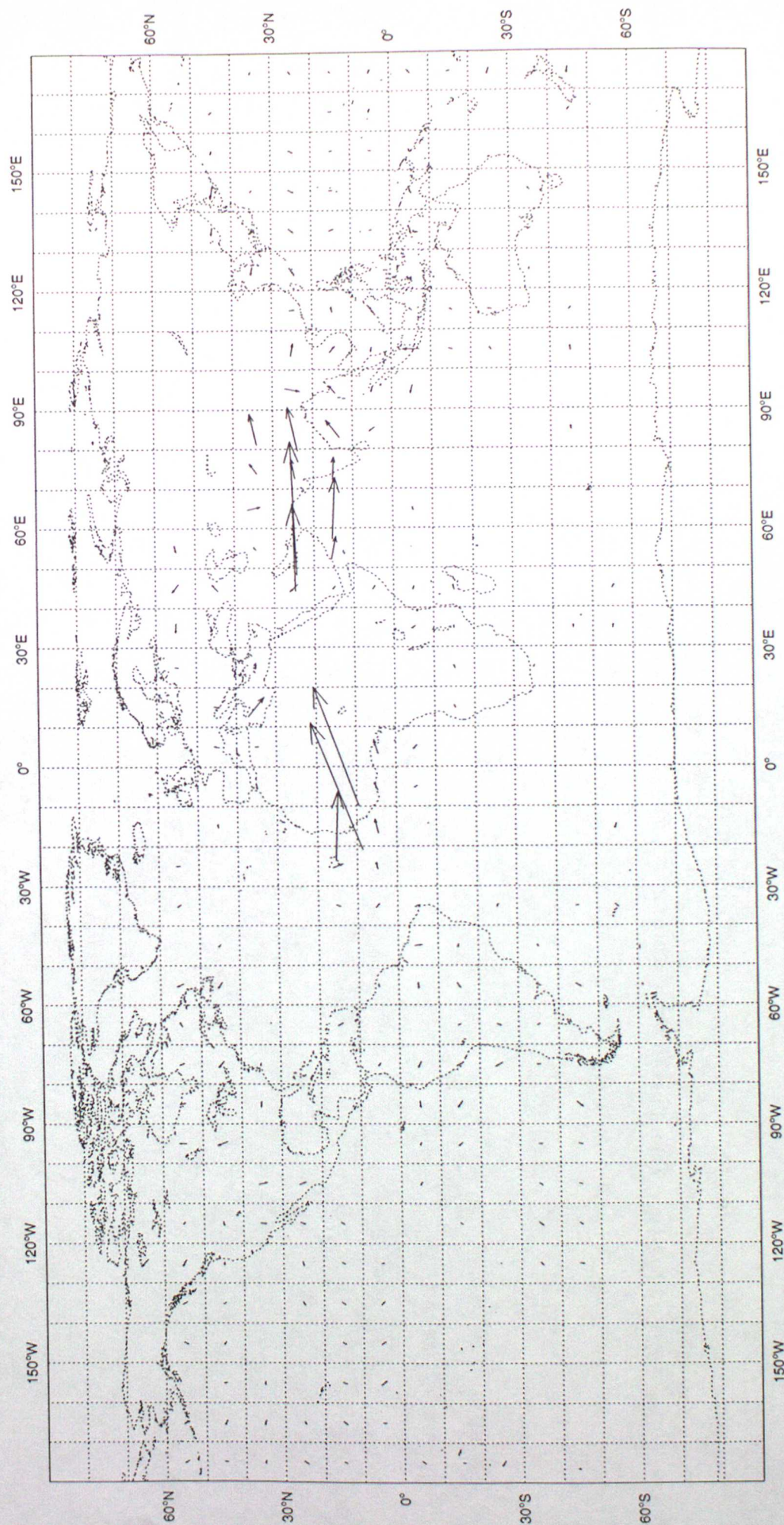


Figure 13. SATOB 701 - 1000 hPa mean O-B speed differences (ms^{-1}). MARCH 2001

All observations

Values are plotted where greater than 10 obs are present

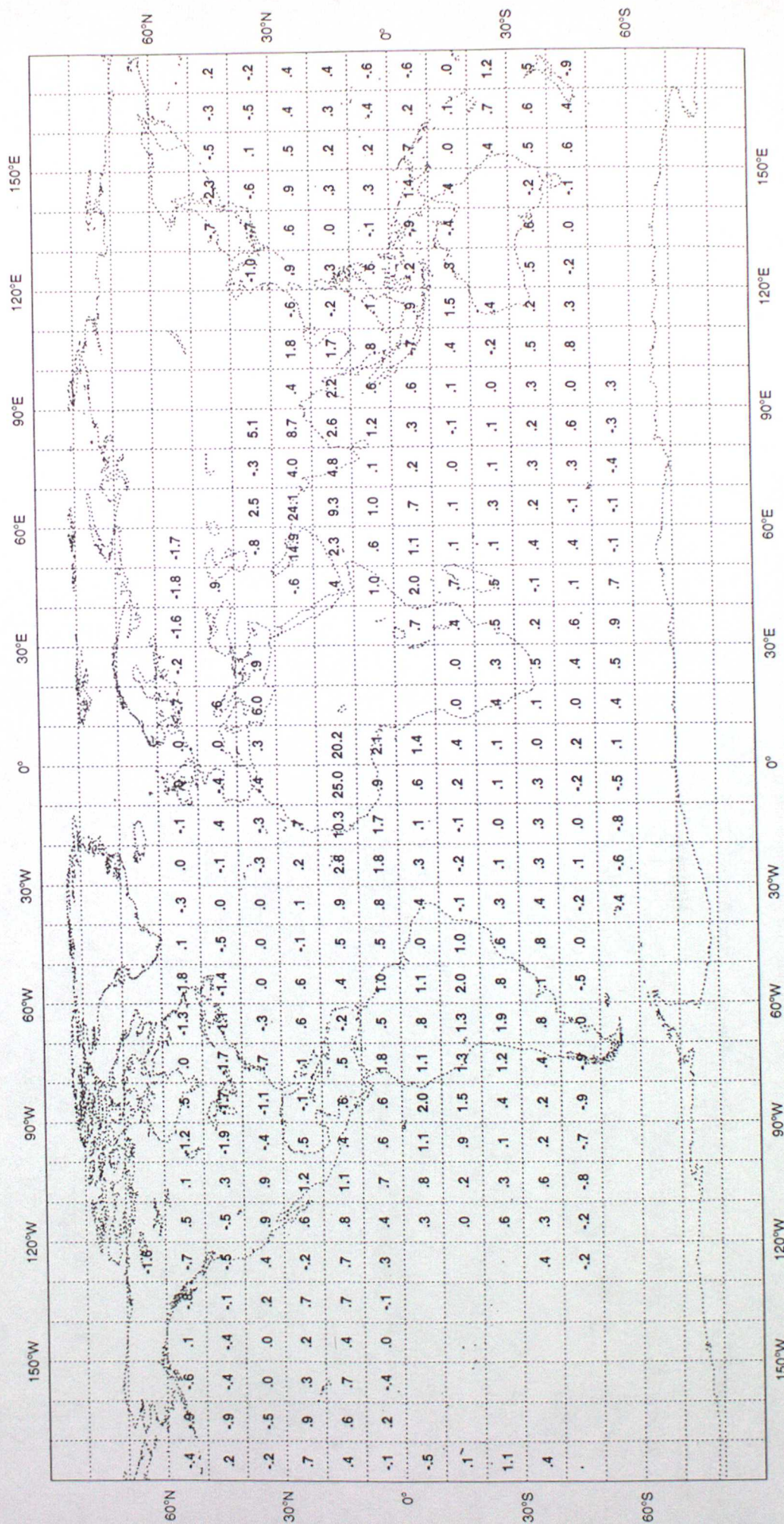


Figure 15. SATOB 401 - 700 hPa mean daily count. MARCH 2001
Global average number of observations in 24 hours = 4853

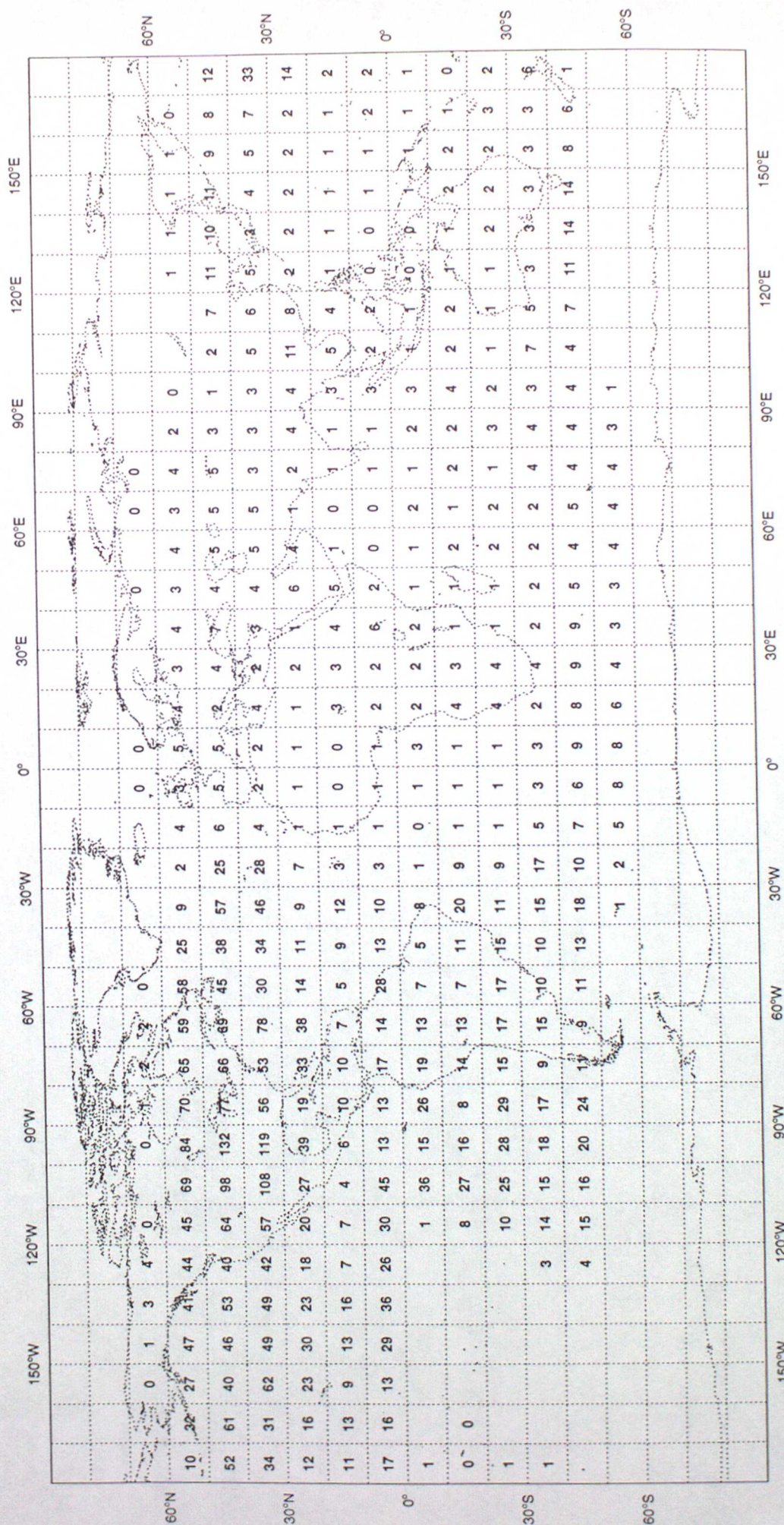


Figure 16. SATOB 401 - 700 hPa vector mean wind. MARCH 2001

All observations

Arrows are plotted where greater than 10 obs are present

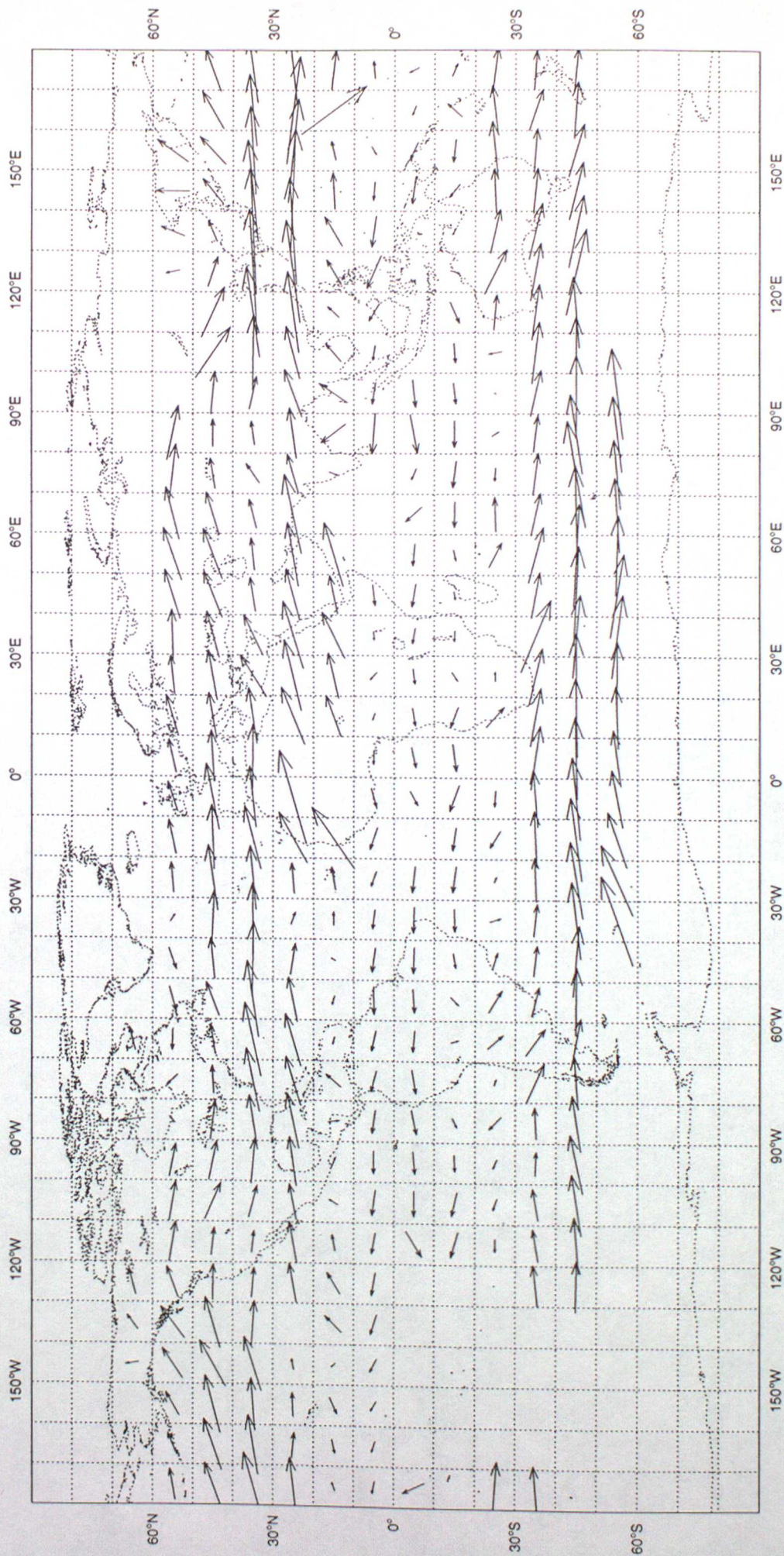


Figure 17. SATOB 401 - 700 hPa vector wind differences. MARCH 2001

All observations

Arrows are plotted where greater than 10 obs are present

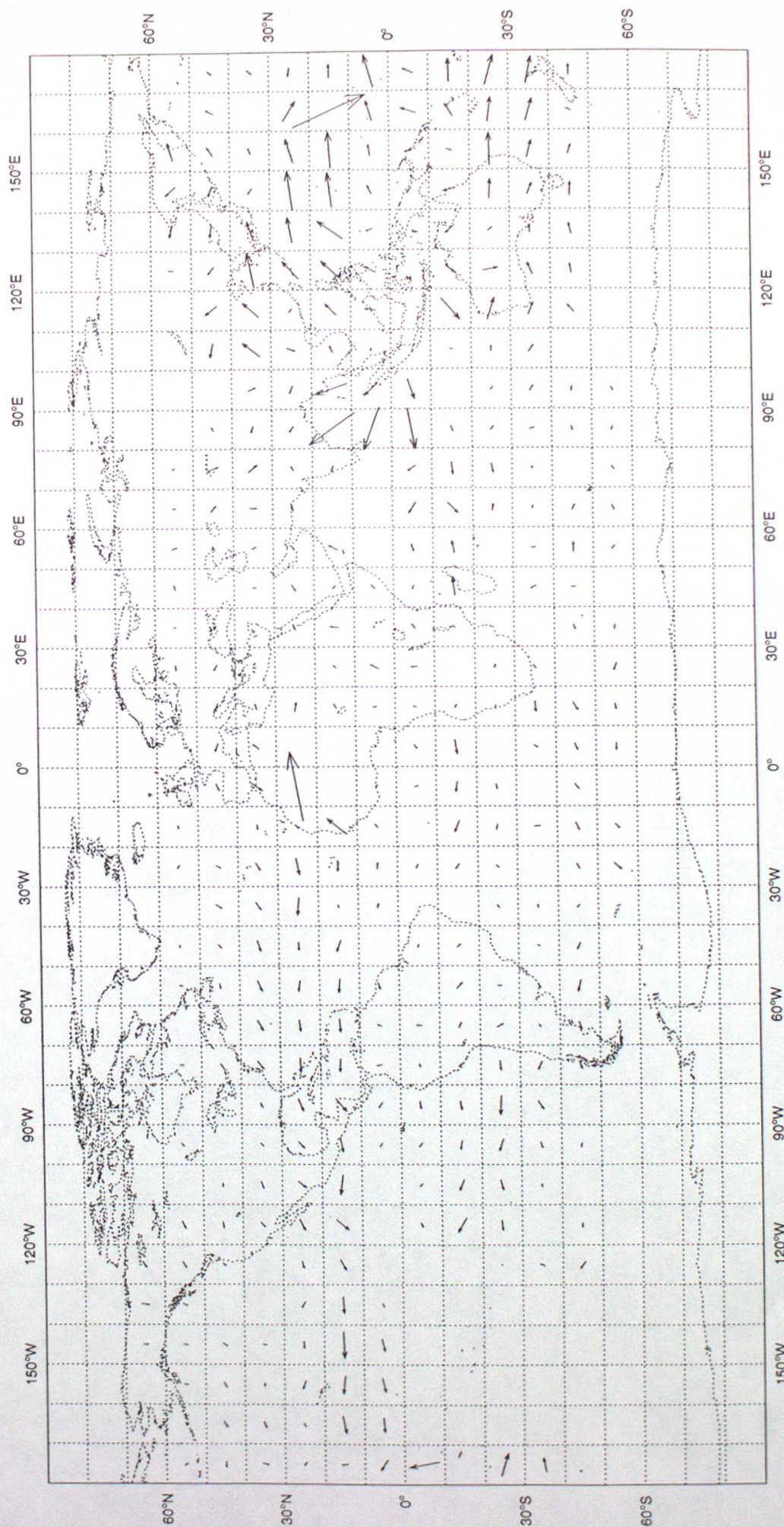


Figure 18. SATOB 401 - 700 hPa mean O-B speed differences (ms-1). MARCH 2001

All observations

Values are plotted where greater than 10 obs are present

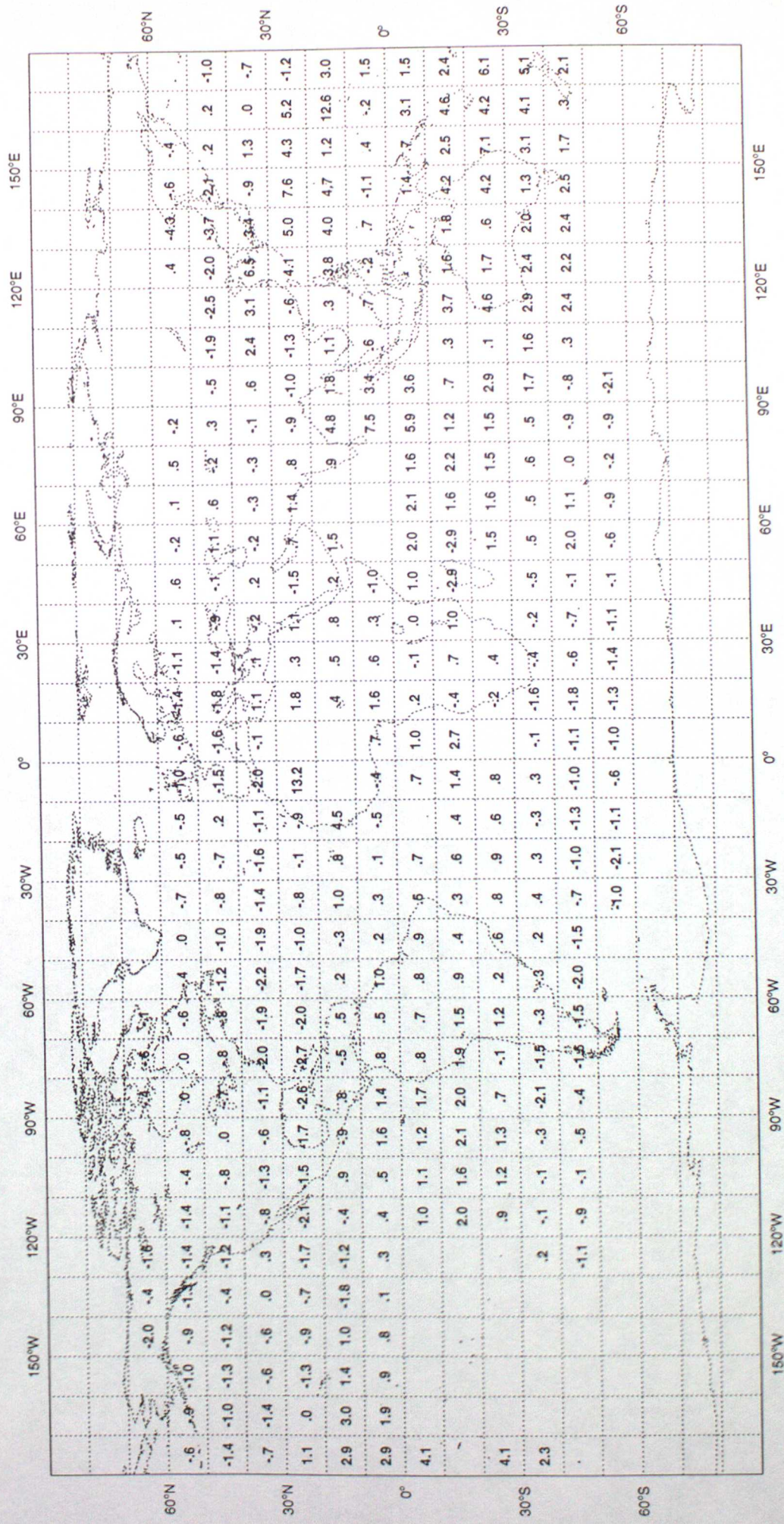


Figure 19. SATOB 401 - 700 hPa RMS O-B vector differences (ms-1). MARCH 2001

All observations

Values are plotted where greater than 10 obs are present

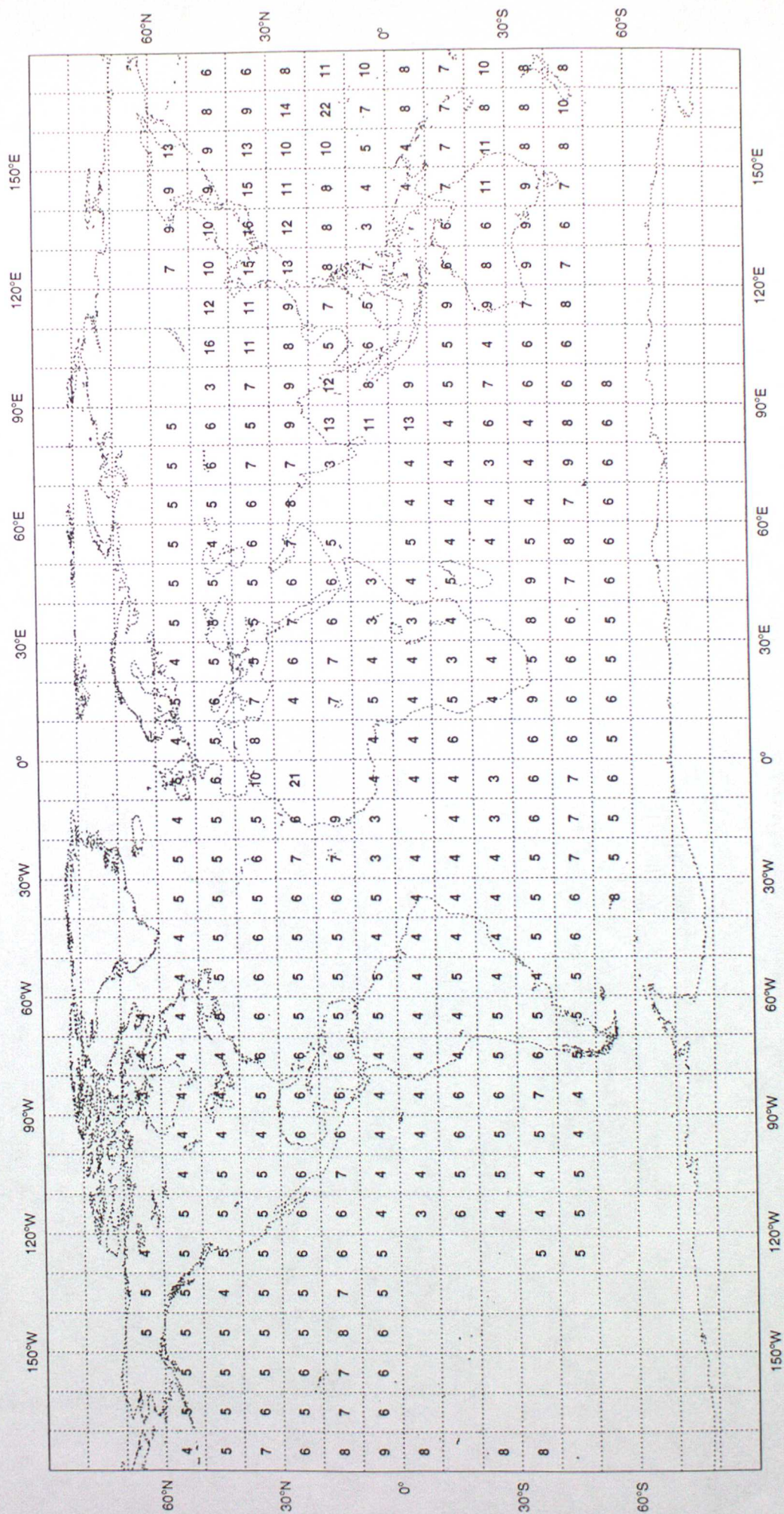


Figure 20. SATOB 101 - 400 hPa mean daily count. MARCH 2001
Global average number of observations in 24 hours = 29838



Figure 21. SATOB 101 - 400 hPa vector mean wind. MARCH 2001

All observations

Arrows are plotted where greater than 10 obs are present

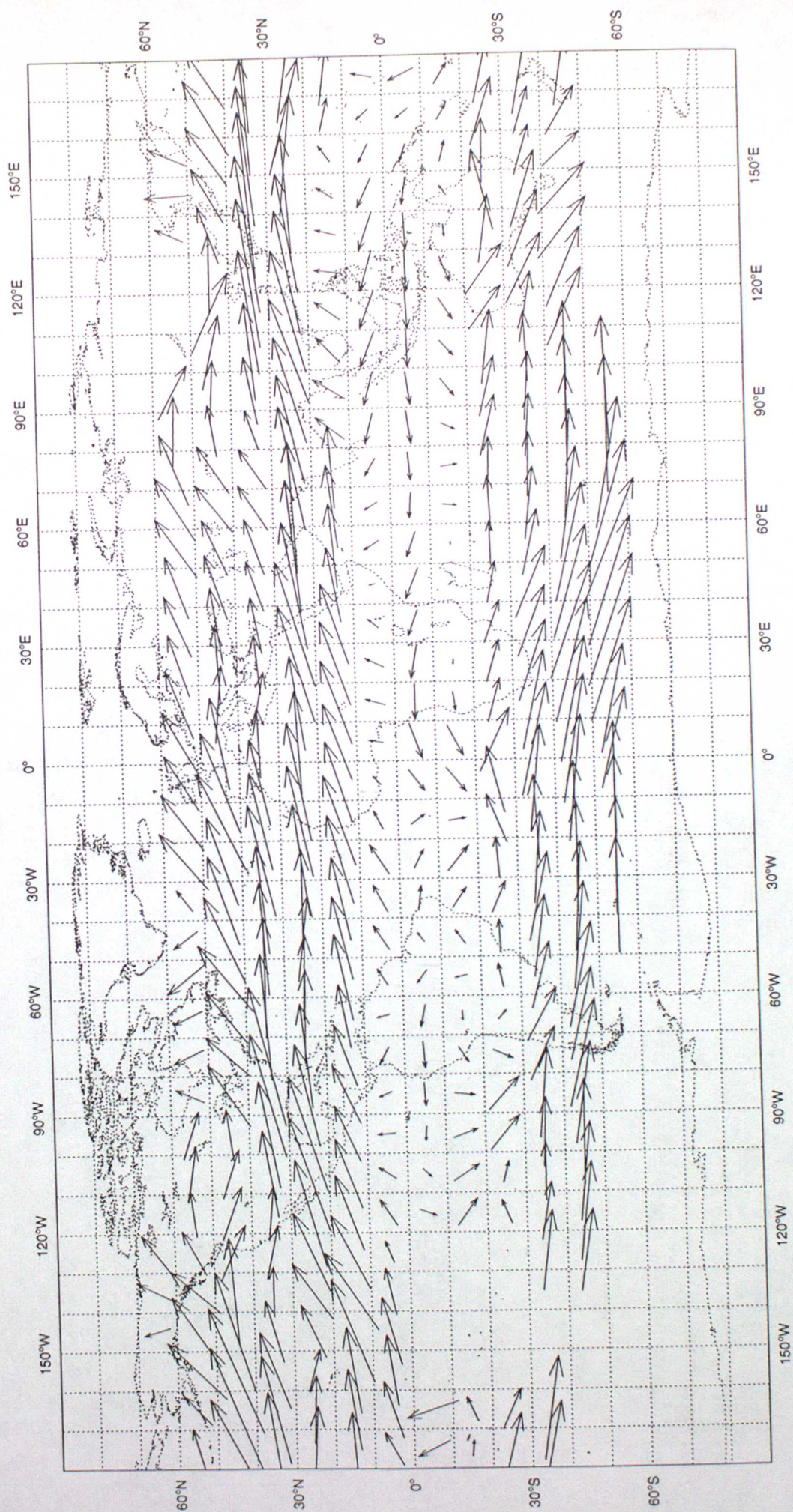


Figure 22. SATOB 101 - 400 hPa vector wind differences. MARCH 2001

All observations

Arrows are plotted where greater than 10 obs are present

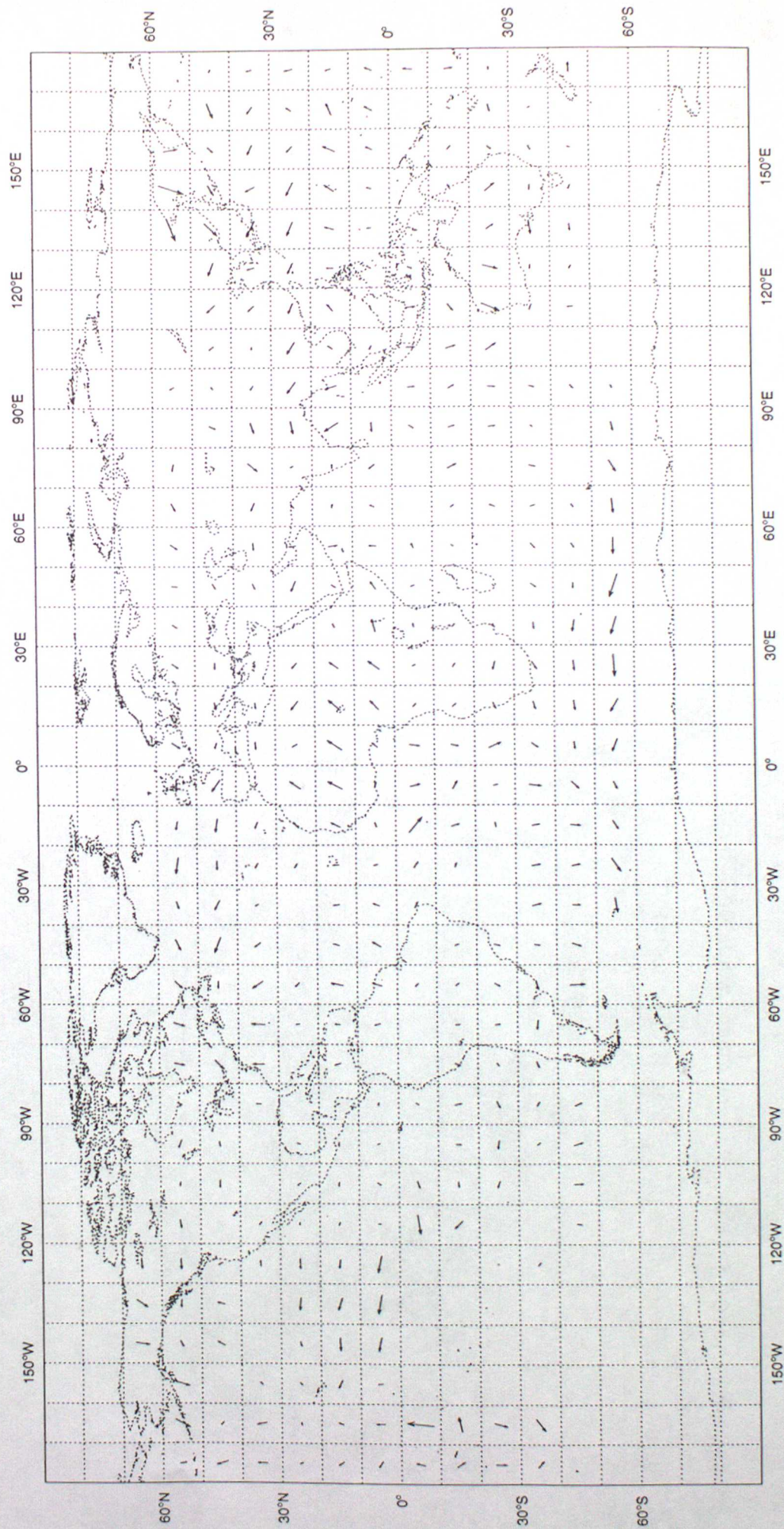


Figure 23. SATOB 101 - 400 hPa mean O-B speed differences (ms-1). MARCH 2001

All observations

Values are plotted where greater than 10 obs are present

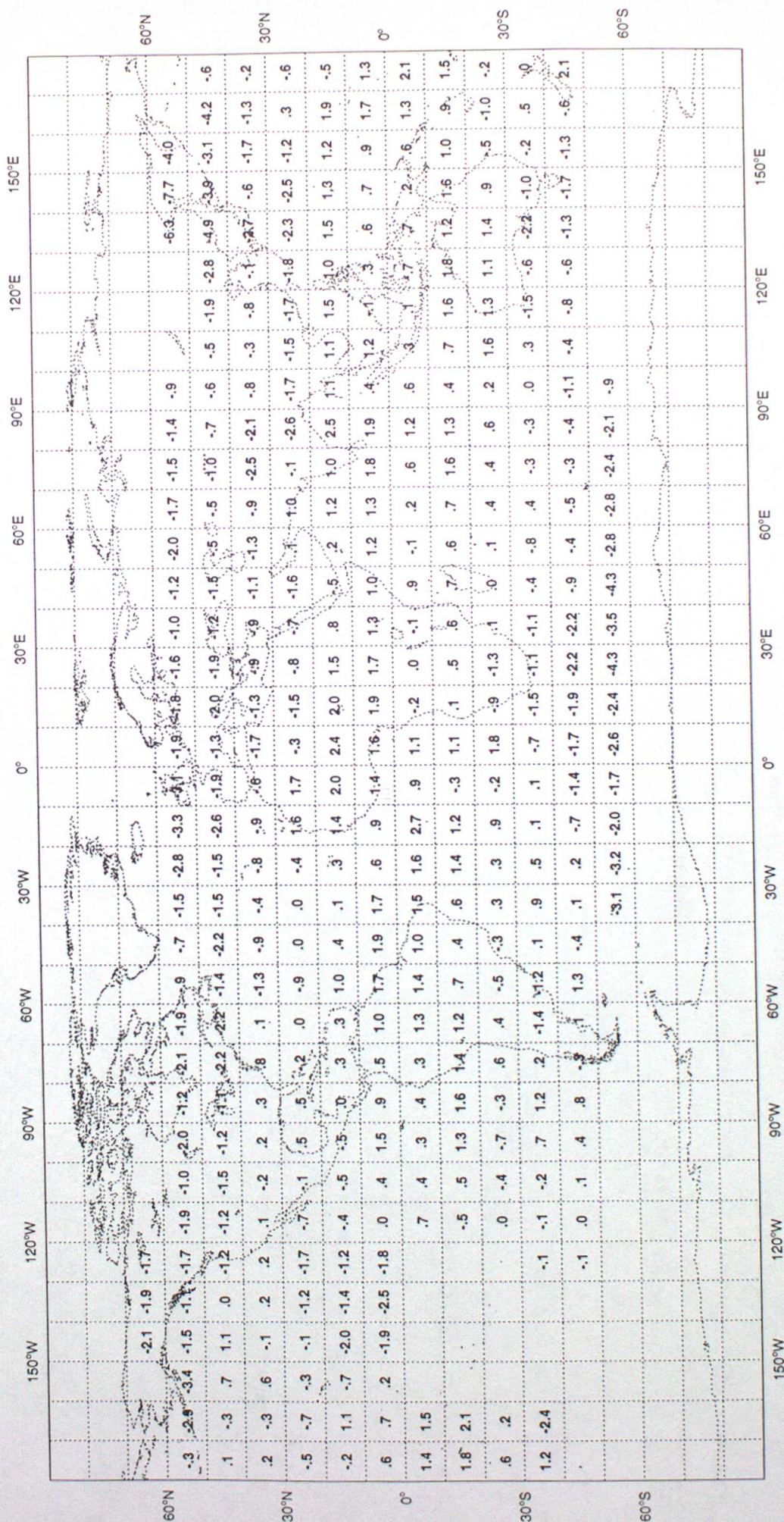
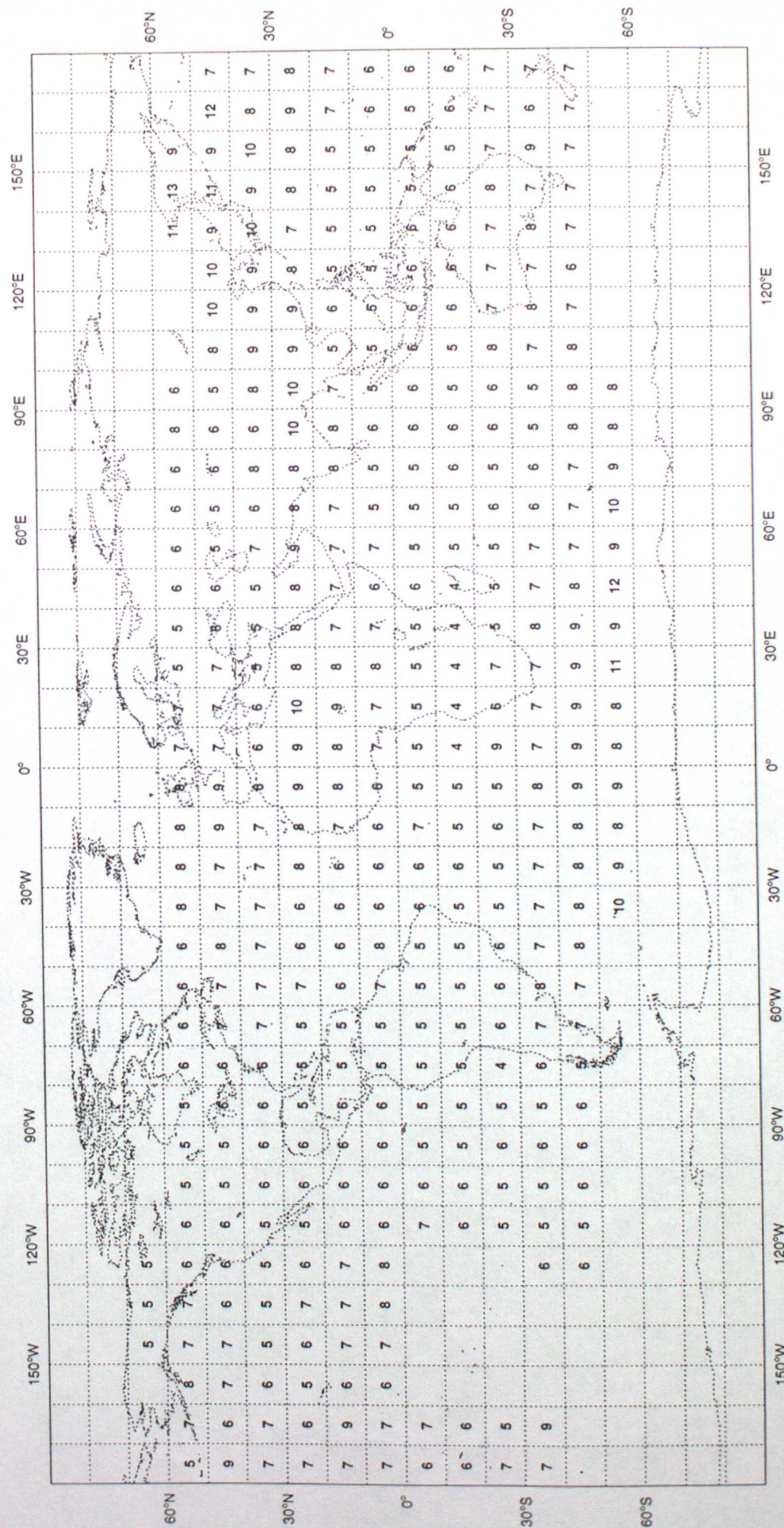


Figure 24. SATOB 101 - 400 hPa RMS O-B vector differences (ms-1). MARCH 2001

All observations

Values are plotted where greater than 10 obs are present



MONITORING OF SATELLITE TEMPERATURES

MONITORING CENTRE: BRACKNELL

MONTH: MARCH 2001

Monitoring procedures

Period :One calendar month.

Data monitored :Reports from NOAA-15.

Standard of comparison :Background field from UKMO global model.

Selection Criteria :All soundings.

Data Extracted :Sounding channels (and approximate weighting function peaks, hPa)
HIRS8 (Surface)
HIRS15 (700)
HIRS11 (500-700)
HIRS4 (400)
AMSUA5 (700)
AMSUA7 (300)
AMSUA9 (100)

:Mean and standard deviation observation-minus-background brightness temperature differences

Figure 26. ATOVS MEAN O-B brightness temperature differences (deg C). MARCH 2001

Channel: HIRS8 (Surface)

NOAA15, using all observations

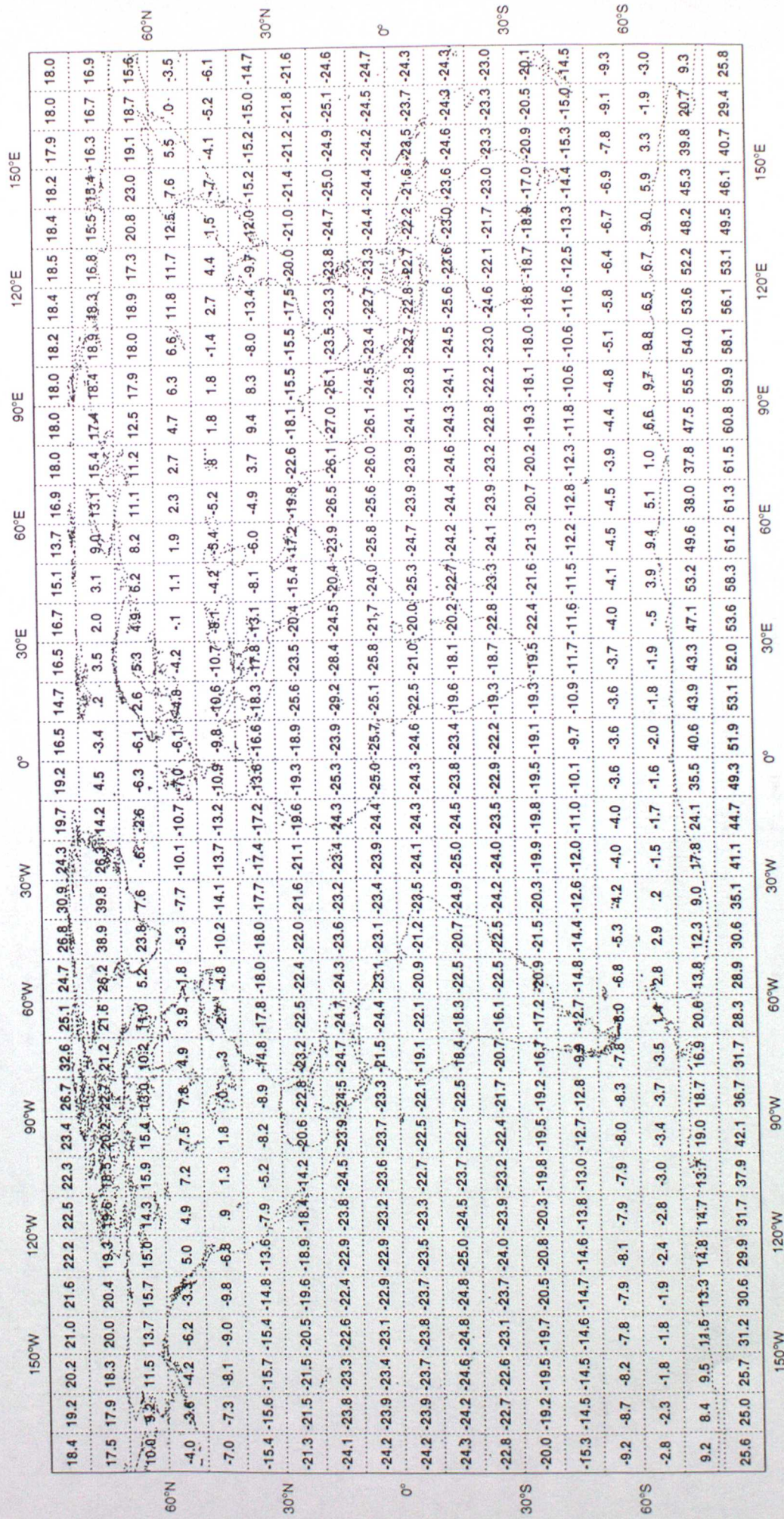


Figure 27. ATOVS SD O-B brightness temperature differences (deg C). MARCH 2001

Channel: HIRS8 (Surface)

NOAA15, using all observations

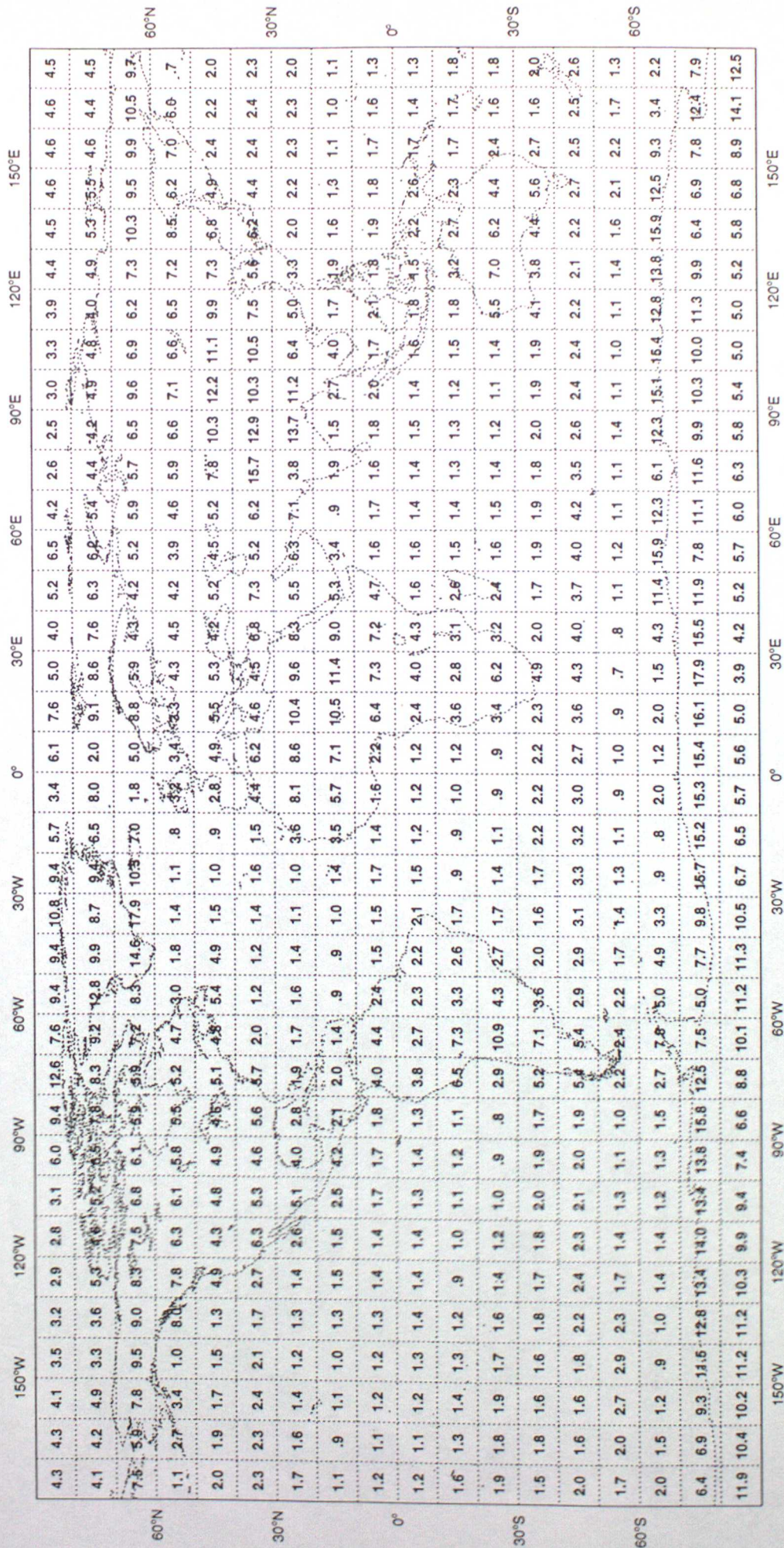


Figure 28. ATOVS MEAN O-B brightness temperature differences (deg C). MARCH 2001

Channel: HIRS15 (700 hPa)

NOAA15, using all observations

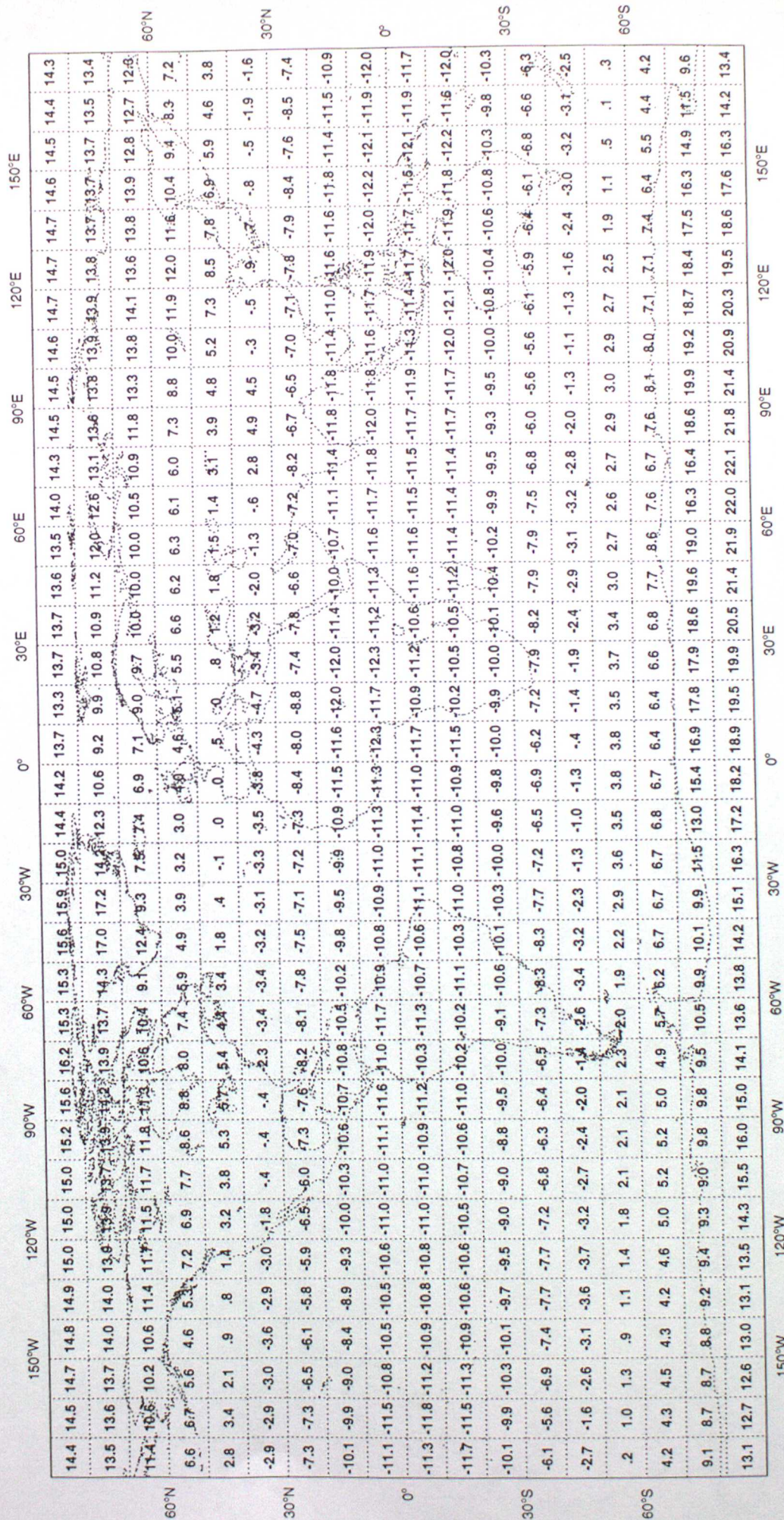


Figure 29. ATOVS SD O-B brightness temperature differences (deg C). MARCH 2001

Channel: HIRS15 (700 hPa)

NOAA15, using all observations

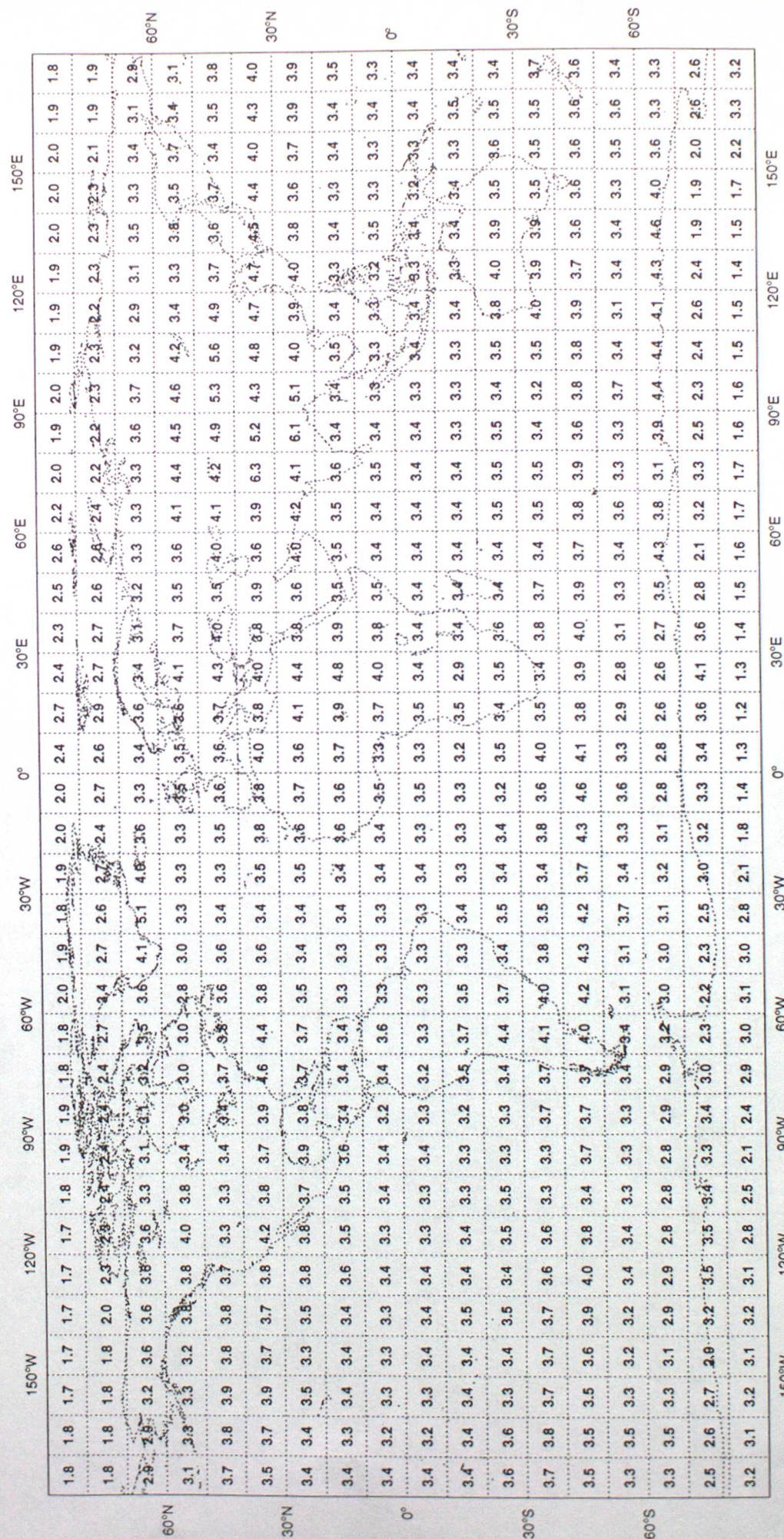


Figure 30. ATOVS MEAN O-B brightness temperature differences (deg C). MARCH 2001

Channel: HIRS11 (500 - 700 hPa)

NOAA15, using all observations

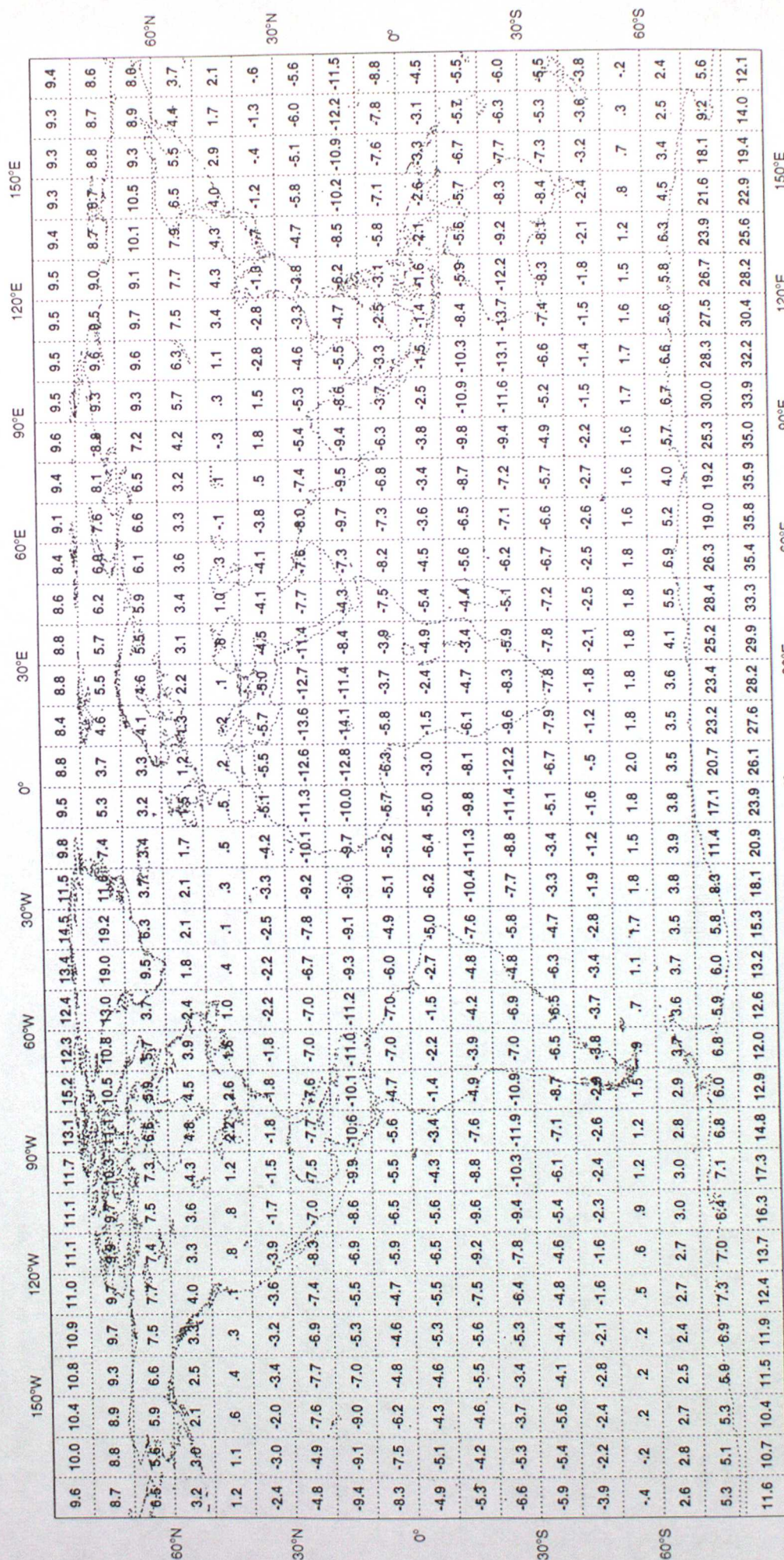


Figure 31. ATOVS SD O-B brightness temperature differences (deg C). MARCH 2001

Channel: HIRS11 (500 - 700 hPa)

NOAA15, using all observations

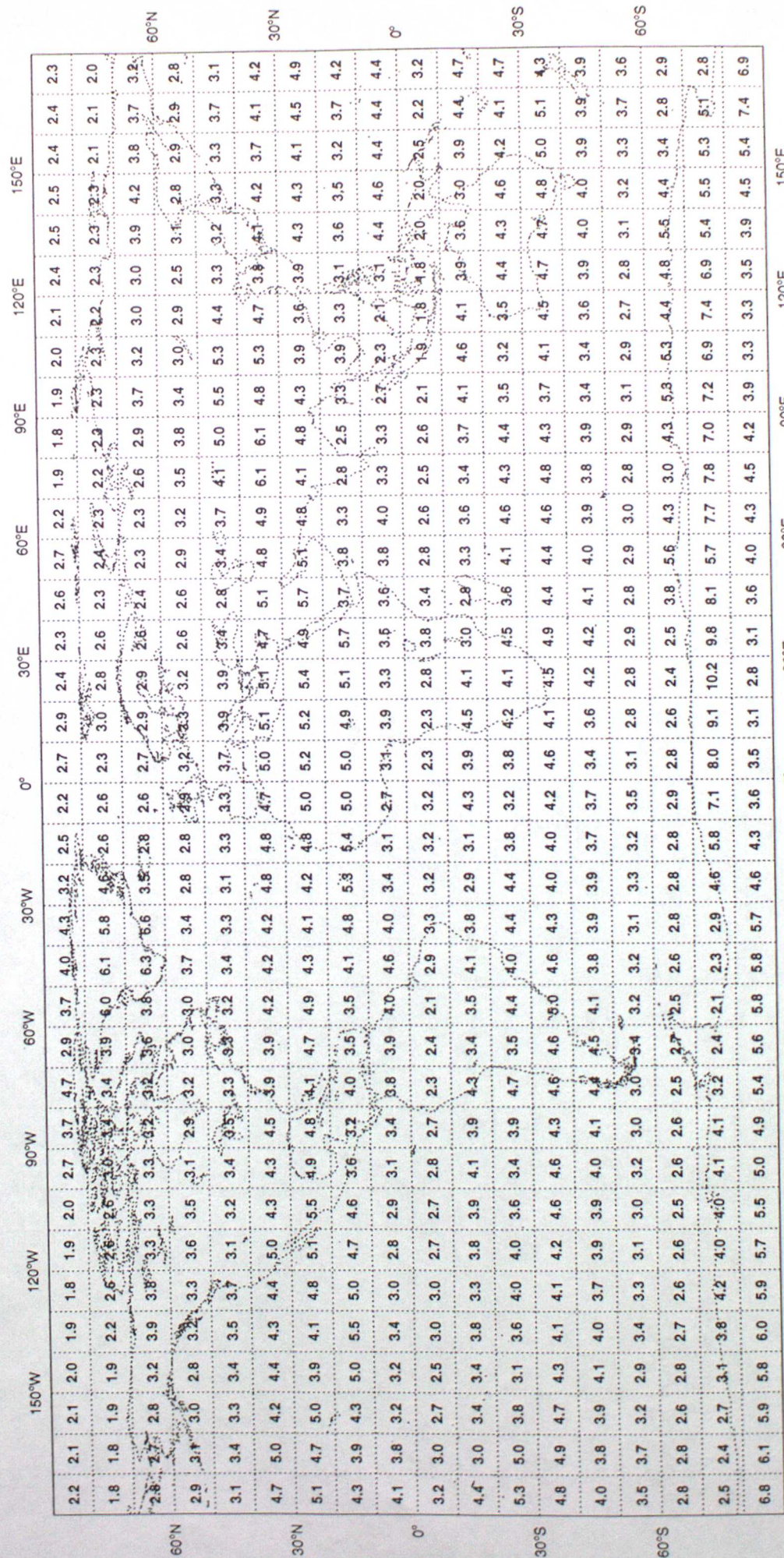


Figure 32. ATOVS MEAN O-B brightness temperature differences (deg C). MARCH 2001

Channel: HIRS4 (400 hPa)

NOAA15, using all observations

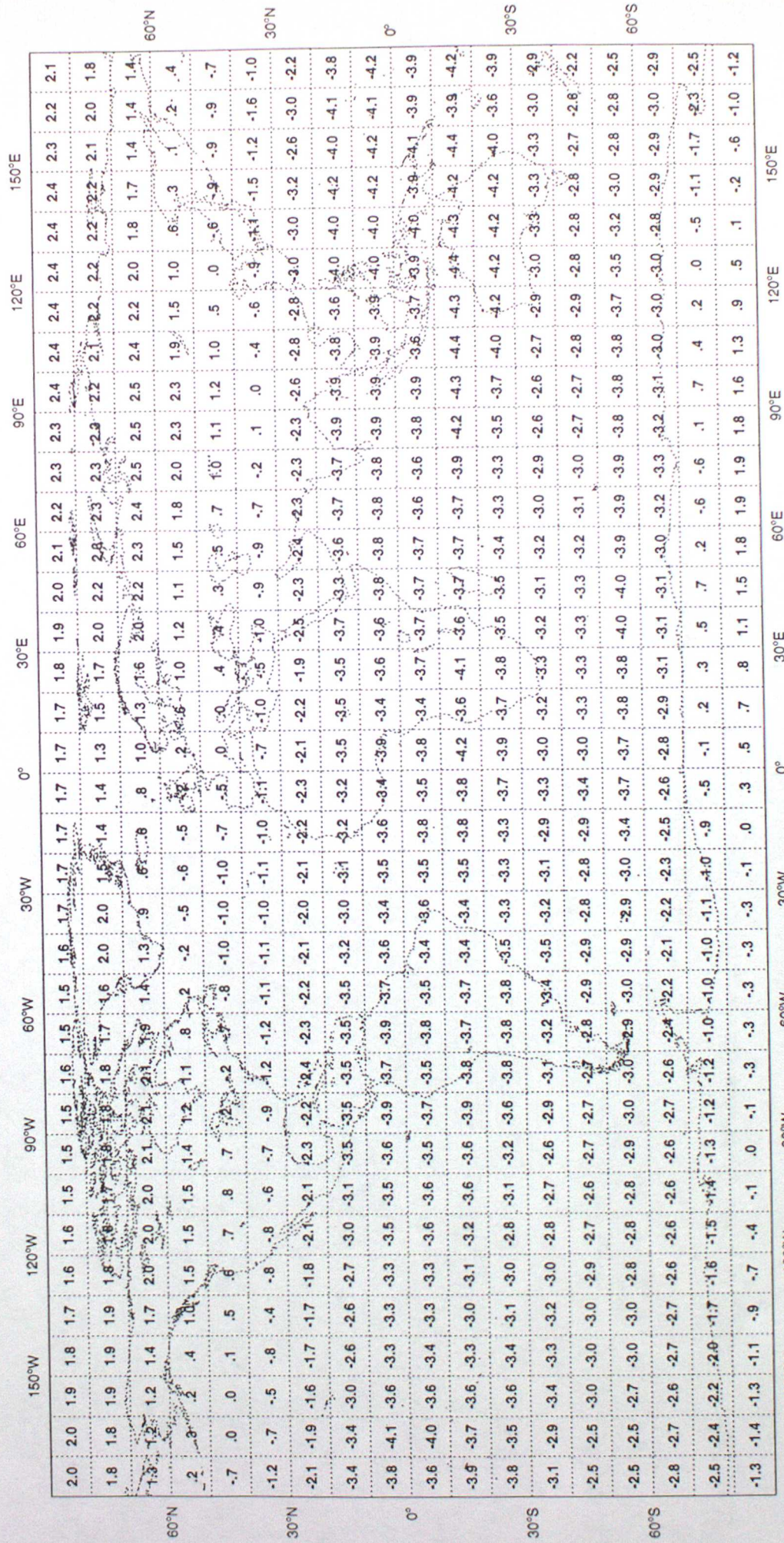


Figure 33. ATOVS SD O-B brightness temperature differences (deg C). MARCH 2001

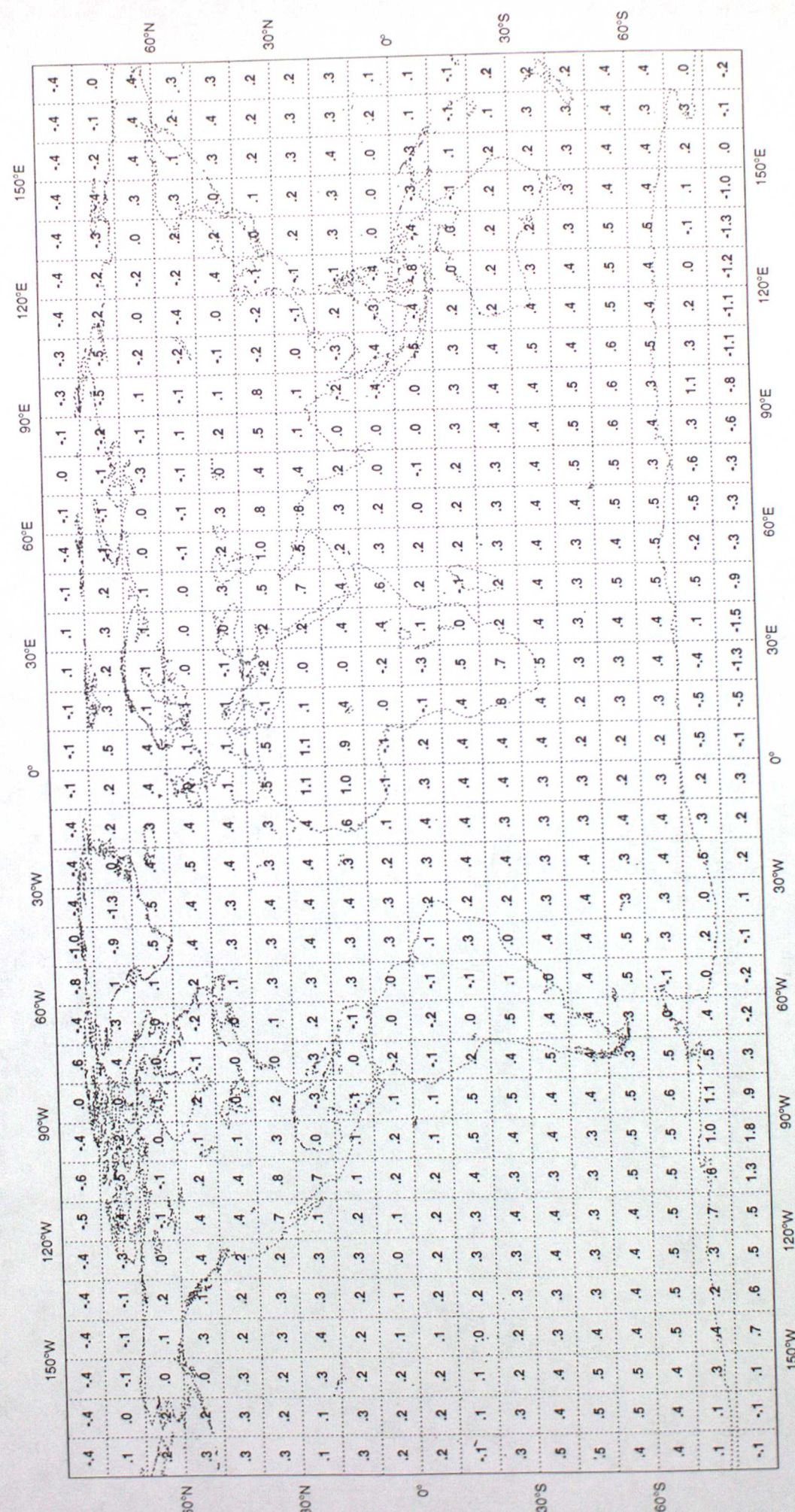
Channel: HIRS4 (400 hPa)

NOAA15, using all observations

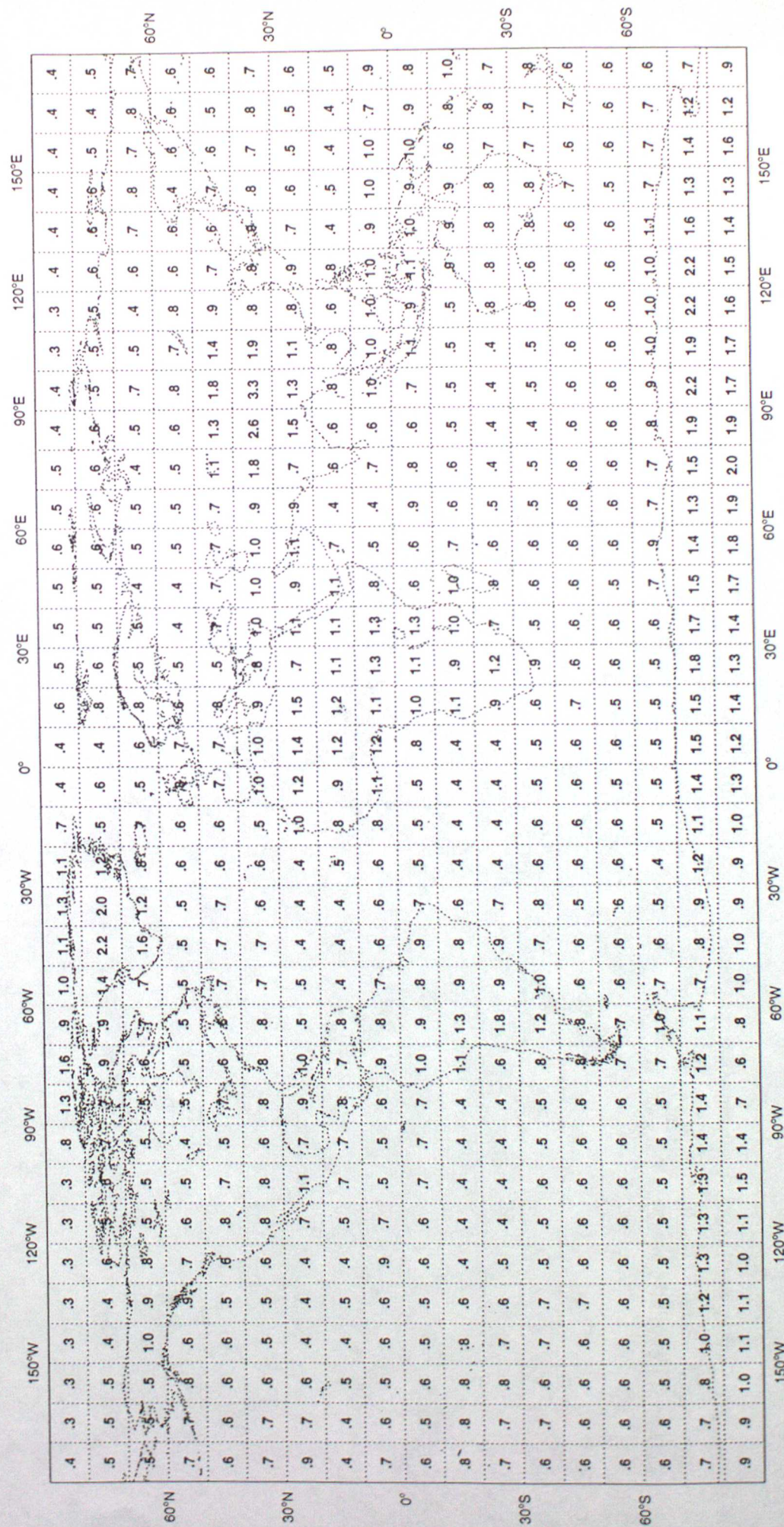


Figure 34. ATOVS MEAN O-B brightness temperature differences (deg C). MARCH 2001

Channel: AMSUA-5 (700 hPa)
NOAA15, using all observations



NOAA15, using all observations



NOAA15, using all observations



Figure 38. ATOVS MEAN O-B brightness temperature differences (deg C). MARCH 2001

Channel: AMSUA-9 (100 hPa)

NOAA15, using all observations

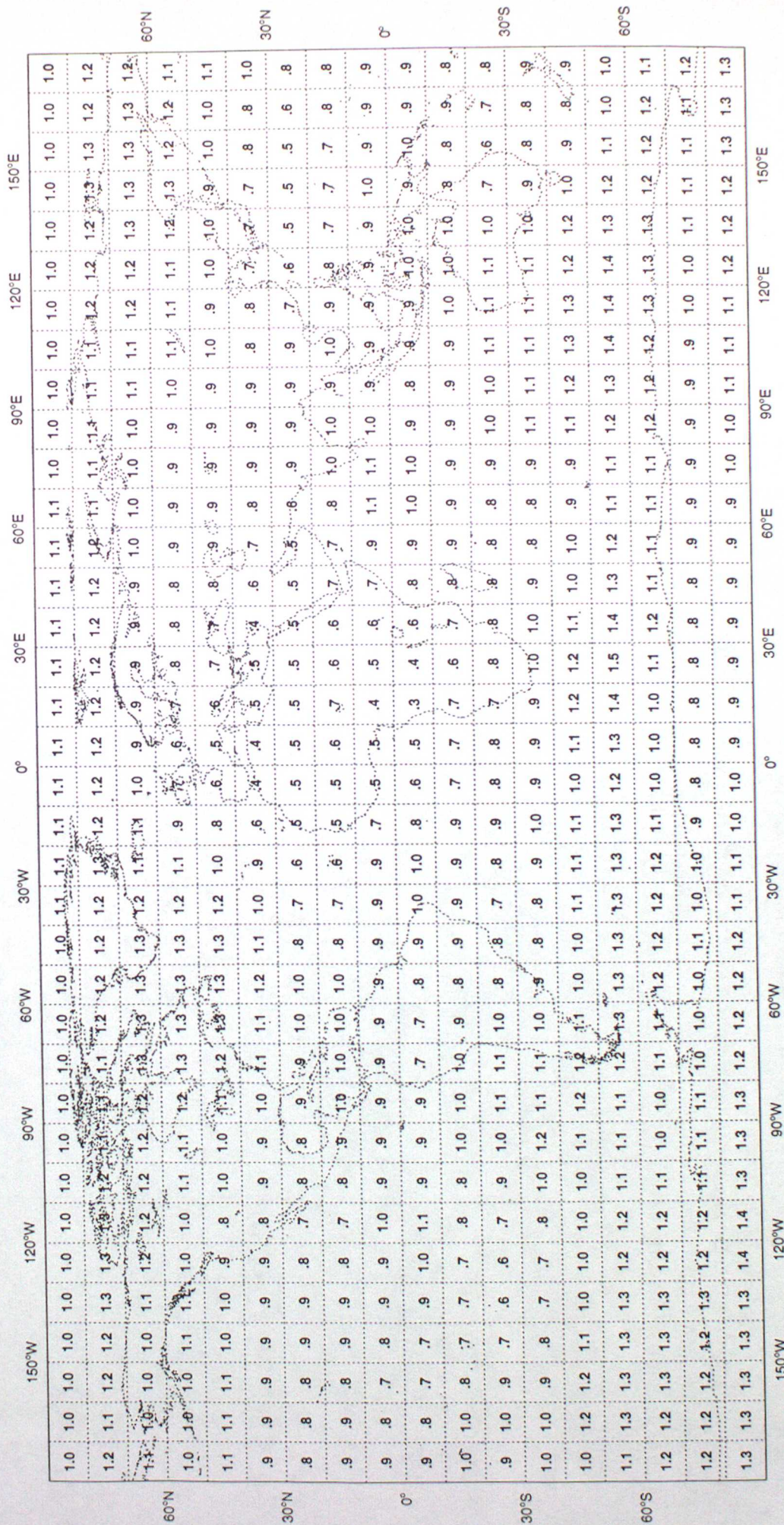


Figure 39. ATOVS SD O-B brightness temperature differences (deg C). MARCH 2001

Channel: AMSUA-9 (100 hPa)

NOAA15, using all observations



TABLE 8

MONTHLY MONITORING OF MARINE SURFACE OBSERVATIONS (COSNA)
 DATA TYPE:- DRIFTER
 MONITORING CENTRE: BRACKNELL
 MONTH: MARCH 2001

Monitoring procedures		
Period		:One calendar month.
Data monitored		:Reports from each unique identifier for drifting buoy.
Area monitored		:10°N - 80°N, 85°W - 0°W
Standard of comparison		:Background field from UKMO global model.
Position		:Average latitude and longitude for period.
Observation times		:All hours combined.
Elements monitored		:Mean sea-level pressure (hPa) :Wind speed (m s^{-1}) :Wind direction (degrees)
Parameters monitored		
	:NOBS	:Number of observations received excluding duplicates.
	:NGE	:Number of observations with gross errors.
	:PGE	:Percentage of observations with gross errors.
	:SD	:SD of difference of observations from background values excluding those with gross errors.
	:BIAS	:Mean difference of observations from background values excluding those with gross errors. N.B. A positive bias indicates the observation is veered to the background
	:RMS	:Root Mean Square difference of observations from background values excluding those with gross errors
GROSS ERROR LIMITS	:15 hPa (pressure) :25 m s^{-1} (Vector Wind)	

N.B. Observations of wind direction are only included in the wind direction statistics if the observed OR background wind speed > 5 m s^{-1}

IDENTIFIER	LAT.	LONG.	HOUR	ELEM	LEVEL	NOBS	NGE	PGE	SD	BIAS	RMS
MEAN SEA LEVEL PRESSURE											
31535	16.3	-70.7	ALL	P	SUR	233	0	0	0.4	1.7	1.8
41501	28.1	-73.4	ALL	P	SUR	262	2	1	1.1	1.6	2.0
41502	24.6	-77.7	ALL	P	SUR	215	0	0	0.9	0.9	1.2
41504	23.9	-64.3	ALL	P	SUR	212	0	0	1.2	0.3	1.2
41505	25.5	-65.4	ALL	P	SUR	184	0	0	1.1	-1.0	1.5
41506	23.0	-75.7	ALL	P	SUR	199	0	0	1.0	0.7	1.2
41521	31.4	-72.8	ALL	P	SUR	251	0	0	0.8	0.3	0.9
41523	29.6	-58.4	ALL	P	SUR	329	0	0	1.0	0.1	1.0
41571	32.9	-46.1	ALL	P	SUR	356	0	0	0.7	0.6	0.9
41572	23.3	-55.3	ALL	P	SUR	613	0	0	0.7	-0.1	0.7
41594	19.3	-81.4	ALL	P	SUR	523	1	0	0.5	0.3	0.6
41595	16.1	-79.8	ALL	P	SUR	657	0	0	0.5	0.5	0.7
41611	17.8	-77.3	ALL	P	SUR	417	0	0	0.5	0.3	0.6
41613	20.6	-48.6	ALL	P	SUR	604	0	0	0.6	0.4	0.7
41616	19.9	-57.3	ALL	P	SUR	618	0	0	0.6	0.4	0.7
41639	19.4	-63.3	ALL	P	SUR	264	0	0	0.6	1.2	1.4
41642	23.0	-69.7	ALL	P	SUR	273	0	0	0.6	0.2	0.6
41644	29.4	-44.1	ALL	P	SUR	303	2	1	1.1	0.7	1.3
44546	58.6	-32.8	ALL	P	SUR	726	5	1	1.8	-0.5	1.8
44548	46.2	-46.1	ALL	P	SUR	442	1	0	1.5	-0.8	1.7
44549	51.1	-42.8	ALL	P	SUR	681	0	0	1.4	0.0	1.4
44550	48.9	-45.3	ALL	P	SUR	666	0	0	1.2	-0.4	1.2
44608	22.7	-40.1	ALL	P	SUR	1938	1	0	0.7	0.5	0.8
44610	56.2	-23.3	ALL	P	SUR	1585	2	0	1.2	0.2	1.2
44611	45.1	-5.7	ALL	P	SUR	617	0	0	0.9	0.5	1.0
44612	37.8	-31.0	ALL	P	SUR	1047	0	0	0.8	0.3	0.9
44613	32.6	-42.0	ALL	P	SUR	794	0	0	0.7	0.4	0.8
44620	27.7	-44.5	ALL	P	SUR	687	0	0	0.7	0.3	0.8
44623	36.1	-28.8	ALL	P	SUR	670	0	0	2.3	0.1	2.3
44628	32.2	-15.8	ALL	P	SUR	980	7	1	1.0	0.4	1.0
44641	42.5	-56.2	ALL	P	SUR	1	0	0	0.0	-0.5	0.5
44724	35.4	-17.7	ALL	P	SUR	570	0	0	0.7	0.3	0.8
44725	49.5	-40.8	ALL	P	SUR	655	0	0	1.0	-0.3	1.1
44727	27.9	-33.4	ALL	P	SUR	208	0	0	0.8	-0.6	1.0
44729	48.3	-14.0	ALL	P	SUR	638	0	0	1.0	0.2	1.0
44737	41.8	-60.9	ALL	P	SUR	1	0	0	0.0	-1.2	1.2
44741	62.8	-32.4	ALL	P	SUR	668	0	0	0.9	0.1	0.9
44743	49.4	-2.6	ALL	P	SUR	1073	3	0	1.1	0.4	1.2
44761	52.2	-17.3	ALL	P	SUR	663	0	0	1.1	-0.2	1.2
44762	45.5	-11.7	ALL	P	SUR	460	9	2	1.0	0.1	1.0
44765	33.6	-41.6	ALL	P	SUR	585	2	0	0.9	0.2	0.9
44770	54.1	-21.7	ALL	P	SUR	634	0	0	1.0	0.1	1.0
44771	53.4	-35.8	ALL	P	SUR	671	0	0	0.9	-0.1	1.0
44772	44.9	-7.3	ALL	P	SUR	1363	4	0	1.2	-0.2	1.2
44774	46.9	-23.7	ALL	P	SUR	1410	11	1	1.0	-0.4	1.1
44775	41.7	-54.5	ALL	P	SUR	645	0	0	1.3	0.1	1.3
44776	48.5	-41.6	ALL	P	SUR	1035	1	0	1.2	0.5	1.2
44778	46.4	-40.6	ALL	P	SUR	662	0	0	1.4	0.3	1.4
44811	41.1	-66.6	ALL	P	SUR	2	0	0	0.8	-1.3	1.6
48581	69.7	-62.7	ALL	P	SUR	441	0	0	1.0	-0.4	1.1
52526	44.7	-63.6	ALL	P	SUR	16	16	100			
52527	44.7	-63.6	ALL	P	SUR	17	17	100			
52528	44.7	-63.6	ALL	P	SUR	12	12	100			
52529	44.7	-63.6	ALL	P	SUR	17	17	100			
52532	44.7	-63.6	ALL	P	SUR	5	5	100			
62501	41.1	-16.7	ALL	P	SUR	724	1	0	1.2	0.5	1.3
62503	40.6	-18.1	ALL	P	SUR	561	0	0	1.3	0.5	1.4
62504	39.5	-19.9	ALL	P	SUR	631	0	0	1.0	0.3	1.0
62505	43.0	-16.4	ALL	P	SUR	484	1	0	0.8	0.5	0.9
62513	49.1	-12.0	ALL	P	SUR	215	0	0	1.0	-0.9	1.3

IDENTIFIER	LAT.	LONG.	HOUR	ELEM	LEVEL	NOBS	NGE	PGE	SD	BIAS	RMS
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MEAN SEA LEVEL PRESSURE

62514	56.3	-13.9	ALL	P	SUR	592	2	0	1.3	0.3	1.3
62517	32.9	-14.3	ALL	P	SUR	44	0	0	0.8	-0.5	1.0
62523	51.4	-7.9	ALL	P	SUR	1	0	0	0.0	-0.8	0.8
62551	43.1	-17.4	ALL	P	SUR	86	0	0	1.3	0.0	1.3
62553	39.8	-17.4	ALL	P	SUR	5	0	0	2.4	-2.6	3.5
62558	45.1	-24.1	ALL	P	SUR	1	1	100			
62564	37.7	-16.4	ALL	P	SUR	175	0	0	0.7	0.2	0.7
62596	62.4	-30.5	ALL	P	SUR	660	0	0	0.9	-0.5	1.0
62703	49.9	-2.9	ALL	P	SUR	1	0	0	0.0	0.9	0.9
62783	44.0	-17.5	ALL	P	SUR	11	0	0	1.3	-3.2	3.5
62784	41.0	-15.7	ALL	P	SUR	16	0	0	2.5	-0.8	2.6
62785	43.2	-16.0	ALL	P	SUR	3	0	0	1.4	-1.2	1.8
62838	58.3	-1.7	ALL	P	SUR	1	0	0	0.0	-1.1	1.1
62850	53.1	-11.2	ALL	P	SUR	1	0	0	0.0	0.2	0.2
62881	51.0	-13.3	ALL	P	SUR	1	0	0	0.0	0.0	0.0
64517	54.8	-14.8	ALL	P	SUR	1159	0	0	0.8	-0.7	1.1
64548	59.8	-10.0	ALL	P	SUR	1505	15	1	1.0	-0.8	1.3
64698	60.6	-28.7	ALL	P	SUR	1087	0	0	0.8	-0.9	1.2
64845	59.1	-11.4	ALL	P	SUR	1	0	0	0.0	1.3	1.3
65503	60.1	-34.1	ALL	P	SUR	1	0	0	0.0	-3.3	3.3
65593	60.4	-35.4	ALL	P	SUR	1854	1	0	1.3	-0.6	1.4
65595	58.0	-42.0	ALL	P	SUR	546	0	0	1.2	0.0	1.2
65600	61.5	-11.7	ALL	P	SUR	2017	0	0	0.9	-0.5	1.1
65602	57.8	-32.8	ALL	P	SUR	1430	10	1	1.3	-0.8	1.5
65662	57.7	-36.7	ALL	P	SUR	739	4	1	1.2	-0.4	1.3
65663	53.0	-42.2	ALL	P	SUR	617	10	2	2.0	-0.8	2.1
68638	47.5	-8.4	ALL	P	SUR	1	0	0	0.0	-0.3	0.3

WIND SPEED

41501	28.1	-73.4	ALL	SPEED	SUR	246	2	1	2.9	1.0	3.0
41502	24.6	-77.7	ALL	SPEED	SUR	140	0	0	3.1	-3.8	4.9
41504	23.9	-64.3	ALL	SPEED	SUR	141	0	0	2.9	-3.1	4.3
41506	23.0	-75.7	ALL	SPEED	SUR	87	0	0	2.3	-3.6	4.2
41521	31.4	-72.8	ALL	SPEED	SUR	4	0	0	5.0	-10.8	11.9
41523	29.6	-58.4	ALL	SPEED	SUR	2	0	0	0.0	-8.9	8.9
41611	17.8	-77.3	ALL	SPEED	SUR	110	19	17	4.8	-1.3	4.9
41639	19.4	-63.3	ALL	SPEED	SUR	260	2	1	3.0	2.5	3.9
41642	23.0	-69.7	ALL	SPEED	SUR	273	2	1	2.8	1.7	3.3
41644	29.4	-44.1	ALL	SPEED	SUR	1	0	0	0.0	-5.5	5.5
44641	42.5	-56.2	ALL	SPEED	SUR	1	0	0	0.0	1.2	1.2
44737	41.8	-60.9	ALL	SPEED	SUR	1	0	0	0.0	0.5	0.5
44743	49.4	-2.6	ALL	SPEED	SUR	560	2	0	2.0	-1.5	2.5
44762	45.5	-11.7	ALL	SPEED	SUR	6	3	50	4.3	-0.8	4.4
44811	41.1	-66.6	ALL	SPEED	SUR	1	0	0	0.0	-0.4	0.4
62504	39.5	-19.9	ALL	SPEED	SUR	631	1	0	2.1	-0.4	2.1
62505	43.0	-16.4	ALL	SPEED	SUR	252	0	0	3.6	-4.5	5.8
62506	30.2	-27.6	ALL	SPEED	SUR	637	0	0	2.5	-3.9	4.6
62551	43.1	-17.4	ALL	SPEED	SUR	234	0	0	1.7	-0.1	1.7
62552	45.7	-18.1	ALL	SPEED	SUR	470	0	0	1.8	-0.5	1.9
62553	39.8	-17.4	ALL	SPEED	SUR	21	1	5	1.6	-1.9	2.5
62554	44.8	-22.0	ALL	SPEED	SUR	438	0	0	1.7	0.2	1.7
62556	39.9	-21.9	ALL	SPEED	SUR	489	0	0	1.6	-0.3	1.6
62557	42.3	-12.7	ALL	SPEED	SUR	442	0	0	1.6	-0.3	1.6
62558	45.1	-24.1	ALL	SPEED	SUR	498	1	0	2.0	-1.6	2.6
62560	42.0	-16.2	ALL	SPEED	SUR	412	0	0	1.8	-1.3	2.2
62564	37.7	-16.4	ALL	SPEED	SUR	486	0	0	1.6	-0.6	1.6
62565	41.8	-17.3	ALL	SPEED	SUR	317	0	0	2.0	-0.6	2.1
62566	42.8	-18.1	ALL	SPEED	SUR	486	0	0	1.9	-0.3	1.9
62567	41.8	-18.8	ALL	SPEED	SUR	486	0	0	2.0	-0.1	2.0
62569	40.6	-16.8	ALL	SPEED	SUR	445	0	0	1.7	-0.4	1.7
62570	44.5	-23.5	ALL	SPEED	SUR	538	0	0	1.7	0.2	1.7

IDENTIFIER	LAT.	LONG.	HOUR	ELEM	LEVEL	NOBS	NGE	PGE	SD	BIAS	RMS
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WIND SPEED

62571	42.8	-17.3	ALL	SPEED	SUR	404	0	0	1.8	-0.9	2.1
62801	45.2	-5.0	ALL	SPEED	SUR	1	0	0	0.0	1.3	1.3
62838	58.3	-1.7	ALL	SPEED	SUR	1	0	0	0.0	2.5	2.5
62850	53.1	-11.2	ALL	SPEED	SUR	1	0	0	0.0	-1.9	1.9
62881	51.0	-13.3	ALL	SPEED	SUR	1	0	0	0.0	2.1	2.1
62904	38.8	-20.2	ALL	SPEED	SUR	1	0	0	0.0	-5.4	5.4
64845	59.1	-11.4	ALL	SPEED	SUR	1	0	0	0.0	-0.1	0.1
68638	47.5	-8.4	ALL	SPEED	SUR	1	0	0	0.0	-2.9	2.9
729815	27.8	-80.0	ALL	SPEED	SUR	1	0	0	0.0	5.3	5.3
795846	27.4	-79.8	ALL	SPEED	SUR	1	0	0	0.0	-0.1	0.1

WIND DIRECTION

41501	28.1	-73.4	ALL	DIRN.	SUR	175	2	1	21.4	5.7	22.2
41506	23.0	-75.7	ALL	DIRN.	SUR	1	0	0	0.0	-11.1	11.1
41611	17.8	-77.3	ALL	DIRN.	SUR	26	19	73	112.2	51.8	123.5
41639	19.4	-63.3	ALL	DIRN.	SUR	186	2	1	17.2	-6.9	18.6
41642	23.0	-69.7	ALL	DIRN.	SUR	156	2	1	15.2	4.0	15.8
44641	42.5	-56.2	ALL	DIRN.	SUR	1	0	0	0.0	-2.6	2.6
44737	41.8	-60.9	ALL	DIRN.	SUR	1	0	0	0.0	0.0	0.0
44743	49.4	-2.6	ALL	DIRN.	SUR	467	2	0	17.0	-7.7	18.6
44762	45.5	-11.7	ALL	DIRN.	SUR	6	3	50	131.0	-1.1	131.0
44811	41.1	-66.6	ALL	DIRN.	SUR	1	0	0	0.0	-57.4	57.4
62504	39.5	-19.9	ALL	DIRN.	SUR	610	1	0	12.7	-6.3	14.2
62505	43.0	-16.4	ALL	DIRN.	SUR	111	0	0	13.4	5.3	14.4
62506	30.2	-27.6	ALL	DIRN.	SUR	85	0	0	22.9	27.5	35.8
62551	43.1	-17.4	ALL	DIRN.	SUR	214	0	0	14.6	-1.4	14.6
62552	45.7	-18.1	ALL	DIRN.	SUR	393	0	0	17.6	-2.0	17.7
62553	39.8	-17.4	ALL	DIRN.	SUR	21	1	5	11.9	-20.5	23.7
62554	44.8	-22.0	ALL	DIRN.	SUR	393	0	0	37.3	3.4	37.5
62556	39.9	-21.9	ALL	DIRN.	SUR	470	0	0	12.7	8.4	15.3
62557	42.3	-12.7	ALL	DIRN.	SUR	367	0	0	17.9	-11.2	21.1
62558	45.1	-24.1	ALL	DIRN.	SUR	457	1	0	15.8	2.7	16.0
62560	42.0	-16.2	ALL	DIRN.	SUR	342	0	0	19.2	-3.1	19.5
62564	37.7	-16.4	ALL	DIRN.	SUR	429	0	0	12.8	-10.3	16.4
62565	41.8	-17.3	ALL	DIRN.	SUR	291	0	0	12.0	-14.3	18.7
62566	42.8	-18.1	ALL	DIRN.	SUR	423	0	0	12.7	-3.7	13.2
62567	41.8	-18.8	ALL	DIRN.	SUR	438	0	0	10.5	-0.9	10.5
62569	40.6	-16.8	ALL	DIRN.	SUR	412	0	0	13.6	-8.0	15.7
62570	44.5	-23.5	ALL	DIRN.	SUR	483	0	0	12.8	2.2	13.0
62571	42.8	-17.3	ALL	DIRN.	SUR	346	0	0	19.3	-3.3	19.6
62801	45.2	-5.0	ALL	DIRN.	SUR	1	0	0	0.0	10.9	10.9
62838	58.3	-1.7	ALL	DIRN.	SUR	1	0	0	0.0	-11.0	11.0
62881	51.0	-13.3	ALL	DIRN.	SUR	1	0	0	0.0	66.8	66.8
62904	38.8	-20.2	ALL	DIRN.	SUR	1	0	0	0.0	23.9	23.9
64845	59.1	-11.4	ALL	DIRN.	SUR	1	0	0	0.0	-17.1	17.1
795846	27.4	-79.8	ALL	DIRN.	SUR	1	0	0	0.0	1.0	1.0

TABLE 9

**MONTHLY MONITORING OF AIRCRAFT OBSERVATIONS (COSNA)
MONITORING CENTRE: BRACKNELL
MONTH: MARCH 2001**

Monitoring procedures:		
Period		:One calendar month.
Data monitored		:Statistics for each airline carrier.
Area monitored		:40°N - 70°N, 60°W - 0°W.
Standard of comparison		:Background field from UKMO global model.
Observation times		:All hours combined.
Level(s) monitored		:300.0 - 150.0 hPa
Elements monitored		:TEMP in °C ; WIND in m s ⁻¹
Parameters monitored	:N REP.	:Number of observations received excluding duplicates.
	:PG	:Percentage of observations with gross errors.
	:PR	:Percentage of observations rejected by quality control including rejections from the duplicate check.
	:PC	:Percentage of observations with calm winds.
	:RMS	:Root Mean Square difference of observations from background values excluding those with gross errors in Temperature & vector wind.
GROSS ERROR LIMITS		
	:10.0 °C ; 60 m s ⁻¹ Vector Wind	
SELECTION CRITERIA	:N REP ≥ 20	

NB : All American ACARS data are grouped together and statistics are shown at the bottom of the table as "US ACARS". All ADS reports are similarly grouped together.

IDENT.	N.REP.	TEMPERATURE				BIAS	N.REP.	PG	WIND		RMS	BIAS
		PG	PR	RMS	PR				PC			
AAL	1963	1	4	1.5	-0.2	1928	0	5	0	6.1	1.0	
ACA	1283	0	2	1.5	0.0	1287	0	2	0	5.6	0.7	
AEA	357	1	4	1.8	0.0	358	1	4	0	7.4	1.6	
AEL	282	0	6	1.8	-0.7	284	0	7	0	8.5	1.3	
AEY	104	0	1	2.1	0.9	103	0	0	0	7.5	2.3	
AFL	247	1	6	2.0	0.4	246	0	3	0	5.9	1.1	
AFR	1101	1	6	1.8	-0.1	1109	1	6	0	7.3	1.2	
AIH	187	2	5	1.6	0.0	191	0	3	0	7.0	1.5	
AJM	118	0	1	1.5	-0.1	119	0	2	0	6.9	1.3	
ALM	48	0	13	1.7	0.4	49	0	14	0	7.3	1.5	
AMM	96	0	1	1.4	0.0	95	1	5	0	8.2	1.8	
AMX	195	2	4	1.9	0.4	195	1	3	0	8.4	1.3	
ANZ	108	1	34	1.6	-1.0	107	0	35	0	5.0	0.5	
AOM	327	0	3	1.9	0.4	332	0	4	0	8.8	1.8	
AVA	79	3	5	1.7	0.6	80	0	3	0	8.7	1.8	
AZA	450	0	5	2.2	-0.1	452	0	6	0	7.1	0.6	
BAL	157	1	8	1.6	0.1	162	1	6	0	8.8	1.5	
BAW	852	0	9	1.7	-0.1	844	0	10	0	5.6	0.7	
BBB	27	0	0	1.0	0.3	26	0	0	0	6.6	2.2	
BLX	27	0	0	1.7	-1.5	27	0	7	0	9.5	0.4	
BWA	55	2	100	1.7	1.1	55	2	7	0	9.9	1.7	
CDN	237	0	9	1.7	-0.3	242	0	11	0	5.6	0.8	
CFC	20	0	10	2.2	0.9	21	0	10	0	5.6	1.3	
CFG	501	0	3	1.9	-0.9	502	0	3	0	7.8	0.8	
CLX	292	0	1	1.7	-0.2	291	0	0	0	4.3	0.3	
CMM	93	0	1	1.3	-0.4	95	0	0	0	5.8	0.9	
COA	421	0	5	1.7	-0.4	417	0	8	0	10.0	1.9	
CRL	414	1	4	2.0	0.5	418	0	5	0	7.5	1.3	
CTB	31	3	10	1.4	0.6	31	0	13	0	6.4	-1.1	
CUB	84	0	1	1.5	0.9	85	0	2	0	9.3	0.9	
DAL	807	0	17	1.8	-0.7	825	0	19	0	7.4	1.0	
DBY	258	0	2	1.7	-0.4	264	0	3	0	7.5	1.4	
DLH	1130	0	4	1.5	0.1	1123	0	5	0	5.7	0.9	
EDW	24	0	0	1.3	0.1	23	0	4	0	9.1	1.3	
EEZ	56	0	100	3.7	2.8	56	0	7	0	7.9	0.8	
ELY	79	0	0	1.3	0.1	79	0	0	0	5.3	0.6	
ETH	44	0	16	1.8	0.1	45	0	16	0	7.7	0.3	
EWX	142	0	1	1.2	0.1	141	0	1	0	5.6	1.3	
FDX	839	0	27	1.6	0.2	848	0	28	0	6.8	0.8	
FIN	408	0	5	1.4	0.3	394	0	6	0	5.5	1.0	
GAF	64	0	5	1.6	-0.7	64	0	5	0	6.9	0.7	
GCO	101	0	7	1.7	0.3	101	0	100	0	14.8	6.5	
GRL	45	0	0	1.2	0.0	44	0	0	0	3.8	0.9	
GTI	121	0	3	1.8	-1.1	117	1	4	0	5.9	0.2	
HLF	85	0	7	1.8	-0.9	84	0	8	0	10.1	2.1	
HZM	21	5	5	2.0	0.3	25	0	0	0	8.7	-0.6	
IBE	1345	1	6	1.8	0.1	1351	1	8	0	8.8	1.2	
ICE	1126	0	3	1.4	0.1	1062	0	4	0	7.2	1.4	
IRL	20	0	5	3.3	3.0	20	0	5	0	5.7	1.5	
IWD	35	0	0	1.6	-1.0	35	0	0	0	9.5	0.1	
JKK	241	1	7	1.4	-0.2	236	0	7	0	7.3	2.0	
JMC	77	0	4	1.3	0.5	72	1	8	0	6.8	1.4	
KLM	1436	0	7	1.6	0.1	1440	0	8	0	7.0	1.1	
LDA	49	0	6	1.4	0.1	47	0	6	0	6.3	0.4	
LDI	504	0	4	1.7	-0.7	508	1	5	0	8.1	0.6	
LIB	228	1	7	1.6	0.7	231	0	8	0	8.7	1.4	
LOT	210	0	4	1.4	-1.0	206	0	6	0	6.5	0.2	
LTU	254	0	4	1.5	-0.5	252	0	4	0	6.7	2.0	
MAH	21	0	5	1.0	0.0	21	0	5	0	5.4	1.1	

IDENT.	N.REP.	TEMPERATURE				BIAS	N.REP.	PG	WIND			BIAS
		PG	PR	RMS	PR				PC	RMS		
MAS	45	0	4	2.2	1.0		45	0	64	0	7.4	-0.2
MON	52	0	0	1.4	-0.5		53	0	2	0	6.4	-0.3
MPD	137	1	1	1.6	0.0		134	0	3	0	8.5	0.8
MPH	436	0	2	1.9	-1.0		442	0	2	0	6.8	1.1
NCA	30	0	0	1.5	-0.4		28	0	0	0	5.7	1.5
NWA	3442	0	2	1.5	0.3		3418	0	2	0	5.9	0.7
OAE	23	0	4	1.3	-0.4		23	0	9	0	15.1	5.2
PAC	127	0	5	1.8	-0.4		134	0	6	0	6.2	1.6
RAM	26	0	19	2.2	-0.1		26	0	19	0	7.1	0.9
RCH	122	2	7	2.1	1.0		127	0	100	0	11.4	2.0
RRR	32	0	3	1.8	0.2		34	0	3	0	6.2	-0.2
RZO	62	0	3	1.9	-0.5		62	2	55	0	8.0	1.3
SIA	45	0	0	1.6	-0.9		45	0	4	0	7.0	0.6
SLR	129	0	5	1.6	0.1		129	0	5	0	6.4	0.6
SVA	48	0	8	2.3	0.2		51	0	12	0	8.8	3.1
SWR	22	0	5	2.1	1.0		24	0	25	0	13.6	2.3
TAP	208	1	2	1.6	-0.4		210	0	5	0	9.7	1.1
TSC	65	0	2	1.7	0.3		65	0	14	0	14.1	3.0
TWA	348	1	7	1.6	0.0		332	0	7	0	7.0	0.6
UAL	1312	0	100	1.6	-0.3		1324	0	100	0	5.1	0.8
UPS	873	0	25	1.7	0.3		877	0	26	0	7.4	0.7
USA	177	3	6	1.4	-0.3		144	0	6	0	6.5	1.7
VIR	443	0	3	1.6	-0.2		453	0	4	0	6.1	1.0
VKG	62	0	2	1.6	0.2		65	2	3	0	6.0	0.2
WOA	47	0	13	1.5	0.0		47	0	13	0	7.6	1.1
EU	21039	0	15	1.2	-0.1		21039	0	15	0	4.4	0.5
KL	2791	1	8	1.5	0.9		2782	0	8	0	5.8	0.6
LH	636	0	11	1.5	0.9		634	0	11	0	4.6	0.8
N	349	1	1	1.9	0.5		352	0	3	0	7.5	1.2
ACARS	26296	7	32	1.4	0.3		26296	0	24	0	4.9	0.6

TABLE 10

**MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS (COSNA)
MONITORING CENTRE: BRACKNELL
MONTH: MARCH 2001**

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from selected radiosonde TEMPs.
Area monitored		:0°N - 90°N, 100°W - 40°E
Standard of comparison		:Background field from UKMO global model.
Position		:Average latitude and longitude for period.
Observation times		:00, 12 UTC.
Level monitored		:100 hPa.
Element monitored		:GEOPOTENTIAL HEIGHT in metres
Parameters monitored	:NUM OBS	:Number of observations available at level shown during period.
	:NUM GROSS	:Number of gross errors at level shown during period.
	:SD	:SD of difference of observations from background values at level shown excluding those with gross errors.
	:BIAS	:Mean difference of observations from background values at level shown excluding those with gross errors.
GROSS ERROR LIMITS		:Defined in Appendix I.1

WMO IDENT	OBS TIME	ELM	LEV	NUM OBS	NUM GROSS	SD	RMS	BIAS
ELML7	00	Z	100	1	0	0.0	20.0	20.0
ELML7	12	Z	100	1	0	0.0	26.0	26.0
FNCM	00	Z	100	7	0	17.9	22.7	14.0
FNCM	12	Z	100	7	0	15.8	21.2	14.1
FNOR	00	Z	100	8	0	13.3	31.1	28.1
FNOR	12	Z	100	10	0	15.5	28.7	24.2
FNOU	00	Z	100	9	0	11.0	27.8	25.6
FNOU	12	Z	100	14	0	19.3	27.0	18.9
FNPB	00	Z	100	10	0	14.1	20.4	14.7
FNPB	12	Z	100	10	0	21.9	23.3	7.8
FNRS	00	Z	100	5	0	12.5	20.1	15.8
FNRS	12	Z	100	5	0	21.8	26.4	15.0
LDWR	00	Z	100	28	0	11.9	16.2	-10.9
LDWR	12	Z	100	29	0	10.4	15.4	-11.3
OVYA2	00	Z	100	16	0	12.5	12.8	2.4
OVYA2	12	Z	100	19	0	12.1	12.3	1.8
SWJS	00	Z	100	5	0	11.4	25.7	23.0
SWJS	12	Z	100	4	0	8.3	19.1	17.3
ZCBP6	00	Z	100	4	0	7.3	7.3	-0.3
ZCBP6	12	Z	100	9	0	27.8	28.2	-4.9
03953	00	Z	100	30	0	10.4	19.3	16.2
03953	12	Z	100	30	0	12.1	14.6	8.2
04018	00	Z	100	29	0	8.7	10.3	5.4
04018	12	Z	100	27	0	11.1	11.2	-1.1
04220	00	Z	100	29	0	8.9	9.3	2.5
04220	12	Z	100	28	0	8.4	8.9	3.1
04270	00	Z	100	29	0	15.5	17.2	-7.5
04270	12	Z	100	30	0	10.0	14.4	-10.4
04339	00	Z	100	29	0	6.4	7.2	3.3
04339	12	Z	100	28	0	11.3	12.1	-4.5
04360	00	Z	100	29	0	9.0	9.0	-0.1
04360	12	Z	100	30	0	7.5	9.7	-6.1
08001	00	Z	100	21	0	19.0	22.2	-11.4
08001	12	Z	100	24	0	23.9	26.9	-12.3
08508	00	Z	100	30	0	16.4	19.2	9.9
08508	12	Z	100	29	0	15.0	17.2	8.3
08522	12	Z	100	23	0	12.6	13.5	5.0
08594	12	Z	100	20	0	14.2	26.9	22.8
60020	00	Z	100	27	0	14.1	25.9	21.7
60020	12	Z	100	30	0	11.5	18.0	13.9
71600	00	Z	100	29	0	19.0	19.5	-4.7
71600	12	Z	100	30	0	15.5	17.5	-8.1
72201	00	Z	100	25	0	17.9	28.7	22.4
72201	12	Z	100	26	0	19.5	31.3	24.5
72402	00	Z	100	29	0	17.3	29.6	24.0
72402	12	Z	100	30	0	18.1	38.8	34.3
74494	00	Z	100	25	0	13.7	13.9	2.3
74494	12	Z	100	28	0	12.3	20.7	-16.6
78016	12	Z	100	28	0	19.4	28.9	21.5

TABLE 11

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS (COSNA)
MONITORING CENTRE: BRACKNELL
MONTH: MARCH 2001

Monitoring procedures:

Period		:One calendar month.
Data monitored		:Reports from selected radiosonde TEMPs.
Area monitored		:0°N - 90°N, 100°W - 40°E
Standard of comparison		:Background field from UKMO global model.
Position		:Average latitude and longitude for period.
Observation times		:00, 12 UTC.
Level monitored		:500 hPa.
Element monitored		:GEOPOTENTIAL HEIGHT in metres
Parameters monitored	:NUM OBS	:Number of observations available at level shown during period.
	:NUM GROSS	:Number of gross errors at level shown during period.
	:SD	:SD of difference of observations from background values at level shown excluding those with gross errors.
	:BIAS	:Mean difference of observations from background values at level shown excluding those with gross errors.

GROSS ERROR LIMITS :Defined in Appendix I.1

WMO IDENT	OBS TIME	ELM	LEV	NUM OBS	NUM GROSS	SD	RMS	BIAS
ELML7	00	Z	500	1	0	0.0	2.0	2.0
ELML7	12	Z	500	1	0	0.0	14.0	14.0
FNCM	00	Z	500	7	0	15.1	15.7	-4.1
FNCM	12	Z	500	7	0	9.6	21.5	19.3
FNOR	00	Z	500	9	0	9.7	13.6	9.6
FNOR	12	Z	500	11	0	7.9	12.8	10.1
FNOU	00	Z	500	12	0	6.3	9.8	7.5
FNOU	12	Z	500	15	0	10.4	16.7	13.0
FNPH	00	Z	500	12	0	11.8	13.1	5.7
FNPH	12	Z	500	10	0	7.7	10.8	7.6
FNRS	00	Z	500	9	0	7.8	8.5	-3.3
FNRS	12	Z	500	8	0	8.6	9.1	3.1
LDWR	00	Z	500	28	0	7.0	8.4	-4.6
LDWR	12	Z	500	29	0	6.3	7.5	-4.0
OVYA2	00	Z	500	16	0	10.5	12.9	7.6
OVYA2	12	Z	500	19	0	9.2	9.7	3.0
SWJS	00	Z	500	5	0	5.1	11.1	9.8
SWJS	12	Z	500	5	0	2.9	8.5	8.0
ZCBP6	00	Z	500	4	0	10.7	11.1	3.0
ZCBP6	12	Z	500	9	0	10.3	12.4	6.9
03953	00	Z	500	30	0	9.3	10.5	4.9
03953	12	Z	500	30	0	10.6	12.9	7.2
04018	00	Z	500	30	0	6.6	12.1	10.2
04018	12	Z	500	28	0	9.0	11.8	7.6
04220	00	Z	500	29	0	10.4	11.4	4.7
04220	12	Z	500	28	0	10.5	10.8	-2.3
04270	00	Z	500	29	0	11.3	11.3	-0.5
04270	12	Z	500	30	0	9.3	9.9	-3.4
04339	00	Z	500	29	0	11.1	12.8	6.4
04339	12	Z	500	29	0	11.3	11.3	-0.6
04360	00	Z	500	29	0	9.6	9.7	1.6
04360	12	Z	500	30	0	8.3	9.0	-3.4
08001	00	Z	500	25	0	13.6	14.7	-5.4
08001	12	Z	500	24	0	12.3	12.3	-0.3
08508	00	Z	500	30	0	14.4	14.8	-3.3
08508	12	Z	500	29	0	11.5	13.6	7.2
08522	12	Z	500	28	0	13.8	17.3	10.4
08594	12	Z	500	23	0	9.5	10.2	-3.5
60020	00	Z	500	27	0	8.4	10.1	5.5
60020	12	Z	500	30	0	6.6	11.1	9.0
71600	00	Z	500	29	0	10.5	11.8	-5.2
71600	12	Z	500	30	0	13.4	14.5	-5.5
72201	00	Z	500	26	0	5.2	5.2	0.5
72201	12	Z	500	28	0	7.5	8.8	-4.6
72402	00	Z	500	29	0	7.9	9.3	4.8
72402	12	Z	500	30	0	9.4	9.6	2.2
74494	00	Z	500	29	0	9.2	9.2	-0.2
74494	12	Z	500	29	0	7.3	9.8	-6.6
78016	12	Z	500	29	0	13.0	15.6	8.8

TABLE 12

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS (COSNA)
MONITORING CENTRE: BRACKNELL
MONTH: MARCH 2001

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from selected radiosonde TEMPs.
Area monitored		:0°N - 90°N, 100°W - 40°E
Standard of comparison		:Background field from UKMO global model.
Position		:Average latitude and longitude for period.
Observation times		:00, 12 UTC.
Level monitored		:100 hPa.
Element monitored		:VECTOR WIND in m s^{-1}
Parameters monitored	:NUM OBS	:Number of observations available at level shown during period.
	:NUM GROSS	:Number of gross errors at level shown during period.
	:UBIAS,VBIAS	:Mean difference of observations of U and V components from background values at level shown excluding those with gross errors.
	:RMS	:Root Mean Square difference of observations from background values at level shown excluding those with gross errors.

GROSS ERROR LIMITS :Defined in Appendix I.2

WMO IDENT	OBS TIME	ELM	LEV	NUM OBS	NUM GROSS	% REJ	RMS	UBIAS	VBIAS
ELML7	00	V	100	1	0	0	4.4	3.8	-2.1
ELML7	12	V	100	1	0	0	2.4	1.8	-1.6
FNCM	00	V	100	7	0	0	2.6	0.7	0.5
FNCM	12	V	100	6	0	0	5.6	-0.2	0.2
FNOR	00	V	100	7	0	0	6.3	1.6	-0.9
FNOR	12	V	100	10	0	0	4.2	0.3	-2.2
FNOU	00	V	100	8	0	0	3.8	2.5	0.2
FNOU	12	V	100	13	0	0	5.3	0.8	1.2
FNPB	00	V	100	7	0	0	5.4	1.4	0.3
FNPB	12	V	100	8	0	0	6.6	-2.0	-1.9
FNRS	00	V	100	6	0	0	4.8	-1.0	3.0
FNRS	12	V	100	4	0	0	5.8	1.7	-0.9
LDWR	00	V	100	28	0	0	2.4	0.1	-0.2
LDWR	12	V	100	29	0	0	2.1	-0.3	-0.5
OVYA2	00	V	100	12	0	0	2.7	1.4	0.1
OVYA2	12	V	100	17	0	0	3.1	-0.4	0.8
SWJS	00	V	100	5	0	0	5.9	0.2	2.6
SWJS	12	V	100	4	0	0	2.6	-0.9	1.8
ZCBP6	00	V	100	3	0	0	3.4	2.1	-1.8
ZCBP6	12	V	100	6	0	0	2.8	-0.4	-1.2
03953	00	V	100	30	0	0	3.2	0.7	0.0
03953	12	V	100	30	0	0	3.1	-0.1	0.6
04018	00	V	100	28	0	0	3.1	0.0	-0.2
04018	12	V	100	27	0	0	2.3	0.3	0.1
04220	00	V	100	29	0	0	2.8	0.1	-0.2
04220	12	V	100	28	0	0	2.6	0.5	0.0
04270	00	V	100	29	0	0	2.6	-0.1	-0.1
04270	12	V	100	30	0	0	3.2	0.0	0.7
04339	00	V	100	27	0	0	5.1	-0.2	-0.3
04339	12	V	100	26	0	0	4.1	1.1	-0.1
04360	00	V	100	29	0	0	2.9	0.4	0.4
04360	12	V	100	29	0	3	5.6	-0.8	0.1
08001	00	V	100	21	0	0	5.5	0.8	-1.2
08001	12	V	100	24	0	0	4.9	1.2	-1.0
08508	00	V	100	21	0	0	4.7	0.2	0.9
08508	12	V	100	16	0	0	5.6	2.0	-0.9
08522	12	V	100	20	0	0	5.4	0.9	1.6
08594	12	V	100	18	0	100	6.1	0.2	3.0
60020	00	V	100	26	0	0	6.1	0.4	0.4
60020	12	V	100	29	0	0	6.3	0.9	1.4
71600	00	V	100	29	0	0	4.4	1.6	-0.4
71600	12	V	100	30	0	0	4.5	0.9	-1.4
72201	00	V	100	25	0	0	4.5	-0.2	1.0
72201	12	V	100	26	0	0	4.7	0.7	0.7
72402	00	V	100	29	0	0	5.2	0.4	-0.8
72402	12	V	100	30	0	0	5.9	1.0	0.5
74494	00	V	100	23	0	34	3.7	-0.6	0.2
74494	12	V	100	27	0	40	3.8	-0.7	-0.2
78016	12	V	100	28	0	0	6.9	1.7	-0.6

TABLE 13

**MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS (COSNA)
MONITORING CENTRE: BRACKNELL
MONTH: MARCH 2001**

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from selected radiosonde TEMPs.
Area monitored		:0°N - 90°N, 100°W - 40°E
Standard of comparison		:Background field from UKMO global model.
Position		:Average latitude and longitude for period.
Observation times		:00, 12 UTC.
Level monitored		:500 hPa.
Element monitored		:VECTOR WIND in m s^{-1}
Parameters monitored	:NUM OBS	:Number of observations available at level shown during period.
	:NUM GROSS	:Number of gross errors at level shown during period.
	:UBIAS,VBIAS:	Mean difference of observations of U and V components from background values at level shown excluding those with gross errors.
	:RMS	:Root Mean Square difference of observations from background values at level shown excluding those with gross errors.

GROSS ERROR LIMITS :Defined in Appendix I.2

WMO IDENT	OBS TIME	ELM	LEV	NUM OBS	NUM GROSS	% REJ	RMS	UBIAS	VBIAS
ELML7	00	V	500	1	0	0	4.7	3.5	-3.2
ELML7	12	V	500	1	0	0	14.0	13.2	-4.5
FNCM	00	V	500	7	0	0	4.6	-1.1	-0.8
FNCM	12	V	500	7	0	0	3.1	-0.9	1.1
FNOR	00	V	500	9	0	0	3.8	-1.0	-0.4
FNOR	12	V	500	11	0	0	5.8	0.0	2.1
FNOU	00	V	500	10	0	0	5.2	0.5	0.2
FNOU	12	V	500	15	0	0	4.1	-0.3	0.4
FNPH	00	V	500	8	0	0	5.6	1.7	-0.5
FNPH	12	V	500	8	0	0	2.5	1.2	-0.2
FNRS	00	V	500	4	0	0	4.9	-0.9	2.7
FNRS	12	V	500	5	0	0	4.1	-1.8	1.0
LDWR	00	V	500	28	0	0	3.6	-0.1	-0.3
LDWR	12	V	500	29	0	0	3.5	-0.8	0.2
OVYA2	00	V	500	14	0	0	4.7	-0.4	0.5
OVYA2	12	V	500	17	0	0	3.8	-0.1	-0.6
SWJS	00	V	500	5	0	0	2.4	0.9	0.1
SWJS	12	V	500	5	0	0	4.0	1.7	-0.2
ZCBP6	00	V	500	2	0	0	3.6	-0.3	0.4
ZCBP6	12	V	500	5	0	0	3.6	0.6	1.5
03953	00	V	500	30	0	0	4.6	-0.9	-0.4
03953	12	V	500	30	0	0	4.6	1.3	-0.4
04018	00	V	500	30	0	0	3.9	-0.5	0.0
04018	12	V	500	28	0	0	3.7	0.8	-0.2
04220	00	V	500	28	0	0	3.7	-0.4	-0.4
04220	12	V	500	28	0	0	4.2	0.6	0.6
04270	00	V	500	29	0	0	3.4	-0.3	0.5
04270	12	V	500	30	0	0	5.3	-0.4	-0.2
04339	00	V	500	27	0	3	8.2	0.2	0.1
04339	12	V	500	29	0	3	6.6	0.8	-0.5
04360	00	V	500	29	0	0	4.8	-0.5	0.3
04360	12	V	500	28	0	3	6.0	0.7	-0.1
08001	00	V	500	25	0	0	5.6	1.4	1.0
08001	12	V	500	23	0	0	4.4	0.0	-1.0
08508	00	V	500	20	0	0	5.0	1.2	-0.2
08508	12	V	500	16	0	0	5.1	0.6	-0.9
08522	12	V	500	28	0	0	5.0	-0.9	-0.8
08594	12	V	500	22	0	100	4.3	0.3	0.5
60020	00	V	500	27	0	0	3.6	-0.5	-0.2
60020	12	V	500	29	0	0	4.5	0.0	0.3
71600	00	V	500	29	0	0	4.7	0.1	-0.3
71600	12	V	500	30	0	0	6.1	-0.4	0.3
72201	00	V	500	26	0	0	3.6	0.8	0.9
72201	12	V	500	27	0	0	3.4	-0.4	1.0
72402	00	V	500	29	0	0	3.3	0.0	-0.3
72402	12	V	500	30	0	0	4.0	-0.7	-0.1
74494	00	V	500	29	0	37	5.0	-0.7	0.7
74494	12	V	500	29	0	37	4.1	-1.0	1.4
78016	12	V	500	29	0	0	4.1	1.2	0.7

APPENDIX I

1. The gross error limits for observation minus background differences of geopotential height in Tables 5, 10 and 11 are:-

Level (hPa)	Geopotential height (metres)
1000	100
850	100
700	100
500	150
400	175
300	200
250	225
200	250
150	275
100	300
70	375
50	400
30	450

The weighted RMS values used in Table 5,10 and 11 are calculated using the following weights:-

Level (hPa)	Weight
1000	3.70
850	3.40
700	2.90
500	2.20
400	1.90
300	1.60
250	1.50
200	1.37
150	1.19
100	1.00
70	0.87
50	0.80
30	0.64

2. The gross error limits for observation minus background differences of windspeed in Tables 6,12 and 13 are:-

Level (hPa)	Windspeed m s^{-1}
1000	35
850	35
700	40
500	45
400	50
300	60
250	60
200	50
150	50
100	45